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ROD (Record of Decision)
Annual Report, FY 1987

(U.S.) Environmental Protection Agency
Washington, DC

Jul 88

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ROD ANNUAL REPORT

FY 1987

EPA

JULY 1988

HAZARDOUS SITE CONTROL DIVISION
U.S. ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

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Abstract: The report is a record of decision. It described the situation of pollution, the remedial action what is selected and the estimated capital cost for the remedy in the Davis Liquid Waste site and the Ottati and Goss/Great Lakes Container Corporation site (GLCC).

FY 1987 ROD ANNUAL REPORT
TABLE OF CONTENTS

SECTIONS		PAGES
I.	Introduction	1-8
II.	Records of Decision Abstracts	1-97
III.	Records of Decision Summary Table: FY 1987	1-26
IV.	Records of Decision Summary Table: FY 1982-1986	1-55
V.	Records of Decision Key Word List: FY 1982-1987	1-40

SECTION I

INTRODUCTION

INTRODUCTION

Congress enacted the Superfund Amendments and Reauthorization Act (SARA) on October 17, 1986, which added new requirements and special emphasis to the remedial program. Seventy-five Record of Decision (ROD) documents, highlighting these SARA statutory findings, were signed during FY 1987. Forty-four of these RODs addressed final source control measures. The other thirty-one addressed temporary storage (8), ground water action only (16), and no further action (7). Exhibit 1 provides a quantitative summary of FY 1987 remedy selections by site lead, while Exhibit 5 provides Regional remedy selection totals. Following the movement in FY 1986 to delegate ROD approval authority to the Regions, 97% of all FY 1987 RODs were approved in the Regions.

SARA Section 121 mandates the selection of a remedial action that is protective of human health and the environment, attains applicable or relevant and appropriate Federal and State requirements (ARARs), is cost-effective, and utilizes permanent solutions and alternative treatment technologies or resource recovery technologies to the maximum extent practicable. In addition, SARA Section 121 provides a preference for treatment which permanently and significantly reduces the volume, toxicity, or mobility of hazardous wastes. In accordance with these requirements, 61% of final source control RODs (27/44) in FY 1987 employed treatment. This is a 16% increase over FY 1986. Non-treatment was selected for 17 sites where treatment was not practical when balanced against other selection criteria. Thermal destruction/incineration was the most frequently selected treatment, occurring in 13 RODs with solidification as the second most often selected treatment (7 RODs). Exhibit 2 graphically depicts the types and frequency of treatment technologies selected in FY 1987, while Exhibit 3 lists the type of technology selected by site name, State, and Region. In addition, Exhibit 4 lists those RODs between FY 1982-86 that selected treatment technologies.

As a reference document, the FY 1987 ROD Annual Report is designed to provide the Regions, Headquarters and the public with summary information on FY 1987 RODs. It consists of the following sections:

- Introduction - highlights specific accomplishments in the ROD process.
- ROD Abstracts - describes site conditions, key contaminants, selected remedial actions, specific performance standards and goals, institutional controls and site-specific key words for each FY 1987 ROD.
- FY 1987 ROD Summary Table - summarizes operable unit, media and associated contaminants, waste volume, selected remedial actions, specific cleanup goals, and capital and operation and maintenance costs for each FY 1987 ROD.
- FY 1982-1986 ROD Summary Table - summarizes operable unit, media and associated contaminants, waste volume, selected remedial actions, specific cleanup goals, and capital and operation and maintenance costs for each FY 1982-1986 ROD.
- ROD Keyword List - provides major keyword categories and their subcategories for all RODs approved to date. A key word list index located at the beginning of this section provides an overview of all categories and subcategories within the list.

RECORDS OF DECISION ABSTRACTS
FY 1987

TABLE OF CONTENTS
(Continued)

SITE NAME/STATE PAGE

** REGION VIII (continued)

Denver Radium/Open Space, CO 89
Rocky Mountain Arsenal, CO 91

** REGION IX

Litchfield Airport, AZ 92
Operating Industries, CA 93
San Fernando Area I, CA 94
San Gabriel Area 1, CA 95
Stringfellow Acid Pits, CA 96

** REGION X

Colbert Landfill, WA 97

Exhibit 1

FY 1987 ROD SUMMARY

	PROGRAM	ENFORCEMENT	TOTAL
TOTAL RODs COMPLETED	47	28	75
FINAL SOURCE CONTROL RODs	26	18	44
TOTAL RODs EMPLOYING SOURCE TREATMENT	18	9	27
SELECTED REMEDY*			
TREATMENT TECHNOLOGY	22	10	32
INCINERATION/THERMAL	10	3	13
SOLIDIFICATION	5	2	7
STABILIZATION/NEUTRALIZATION	0	2	2
VOLATILIZATION/AERATION	2	1	3
SOIL WASHING/FLUSHING	2	0	2
BIODEGRADATION/LAND APPLICATION	0	1	1
OTHER	3	1	4
CONTAINMENT	17	18	35
ONSITE CONTAINMENT	8	16	24
TEMPORARY STORAGE	8	0	8
OFFSITE DISPOSAL	1	2	3
GROUND WATER	27	18	45
PUMP AND TREATMENT	18	14	32
ALTERNATE WATER SUPPLY	9	4	13
NO FURTHER ACTION	4	3	7

FY 1987 ROD REMEDY COSTS**

	0 - $2M	2 - $5M	5 - $10M	10 - $20M	20 - $50M	$50+
FEDERAL	10	11	6	3	2	1
STATE	8	2	2	0	3	0
ENFORCEMENT	7	8	4	3	2***	1
TOTAL	25	21	12	6	7	2

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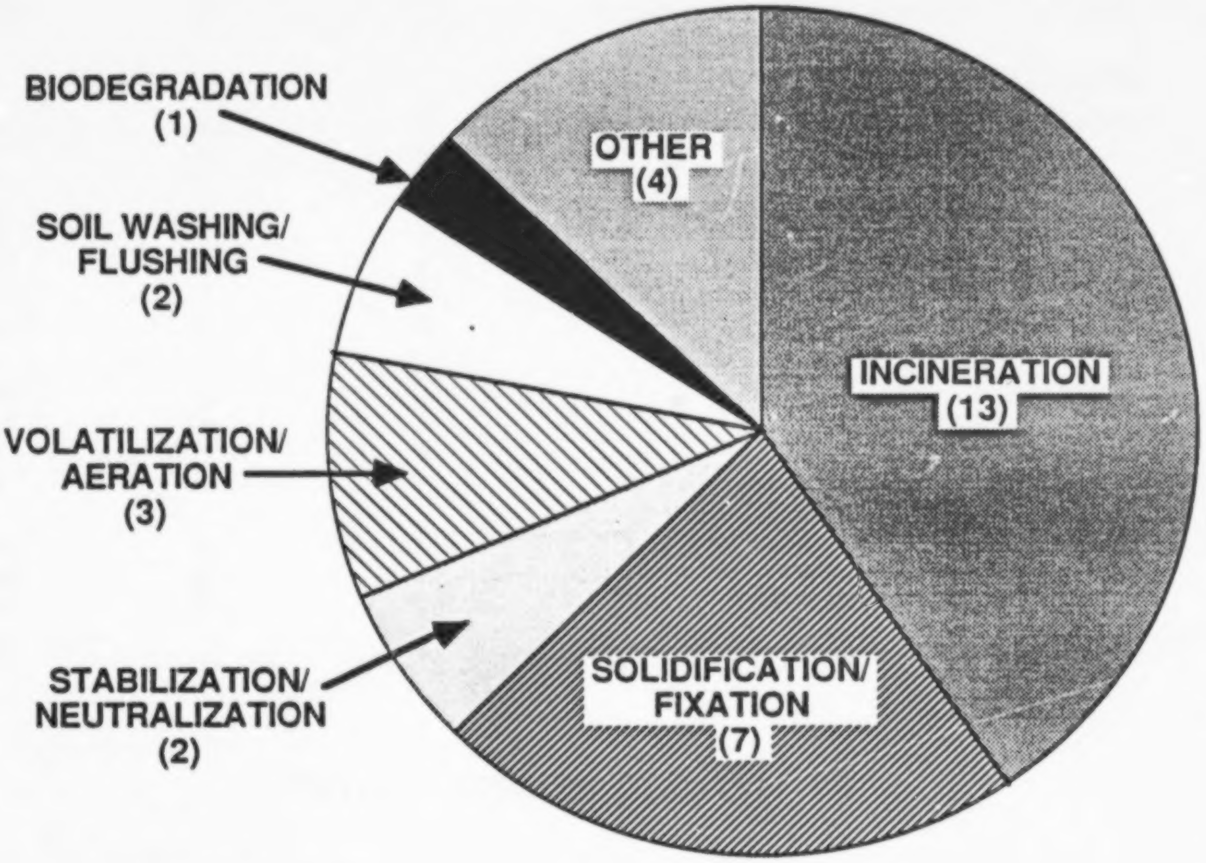
* More than one remedy may be associated with a site

** Includes some present worth costs

*** Includes a combined remedial cost for the Envirochem, IN and Northside, IN sites, which are both represented in one ROD

Exhibit 2

Summary of FY 1987 ROD Sites Selecting Treatment Technologies as Components of Source Control Remedies



NUMBER OF SITES	TYPES
13	INCINERATION
7	SOLIDIFICATION/FIXATION
2	STABILIZATION/NEUTRALIZATION
3	VOLATILIZATION/AERATION
2	SOIL WASHING/FLUSHING
1	BIODEGRADATION
4	OTHER

Exhibit 3

Summary of FY 1987 ROD Sites Selecting Treatment Technologies as Components of Source Control Remedies

TECHNOLOGY	REGION	SITE NAME/STATE
Incineration (13)	I	Davis Liquid Waste, RI
	I	Ottati & Goss, NH
	II	Williams Property, NJ
	IV	Geiger (C&M Oil), SC
	IV	Sodyeco, NC
	IV	Tower Chemical, FL
	V	Laskin/Poplar, OH
	V	Rose Township, MI
	VI	Bavou Bonfouca, LA
	VI	Cleve Reber, LA
	VI	Gurley Pit, AR
	VI	Hardage/Criner, OK
	VI	Sand Springs Petrochemical Complex, OK
Solidification/Fixation (7)	II	Chemical Control, NJ
	IV	Geiger (C&M Oil), SC
	IV	Gold Coast, FL
	IV	Independent Nail, SC
	V	Liquid Disposal Landfill, MI
	V	Northern Engraving, WI
	VI	Sand Springs Petrochemical Complex, OK
Stabilization/Neutralization (2)	VI	Gurley Pit, AR
	VI	Mid-South, AR
Volatilization/Aeration (3)	I	Ottati & Goss, NH
	II	Waldick Aerospace, NJ
	V	Seymour Recycling, IN
Soil Washing/Flushing (2)	I	Davis Liquid Waste, RI
	IV	Palmetto Wood, SC
Biodegradation (1)	II	Renora, Inc., NJ
Other (4)	I	Resolve, MA
	III	Palmerton Zinc, PA
	III	West Virginia Ordnance Works, WV
	VIII	Central City/Clear Creek, CO

Exhibit 4

TREATMENT TECHNOLOGIES SELECTED AT FY82-86 ROD SITES

FISCAL YEAR OF ROD SIGNATURE	TECHNOLOGY	REGION	SITE NAME, STATE
FY82	Stabilization/Neutralization	III	Bruin Lagoon, PA
FY83	—		—
FY84	Incineration	V	Berlin & Farro, MI
			Laskin/Poplar, OH
		X	Western Processing, WA
	Biodegradation	VI	Old Inger, LA
	Stabilization/Neutralization	VI	Bioecology, TX
FY85	Incineration	II	Bog Creek Farm, NJ
			Bridgeport, NJ
			Swope Oil, NJ
		V	Acme Solvents, IL
		VI	MOTCO, TX
			Triangle Chemical, TX
		VIII	Woodbury Chemical, CO
	Soil Washing/Flushing	II	Goose Farm, NJ
		X	South Tacoma/Well 12-A, WA
	Stabilization/Neutralization	II	Wide Beach, NY
		IV	Davie Landfill, FL
	Biodegradation	V	Byron/Johnson Salvage, IL
	Volatilization/Soil Aeration	I	McKin, ME
		V	Verona Well Field, MI
		VI	Triangle Chemical, TX

Exhibit 4

TREATMENT TECHNOLOGIES SELECTED AT FY82-86 ROD SITES (Continued)

FISCAL YEAR OF ROD SIGNATURE	TECHNOLOGY	REGION	SITE NAME, STATE
FY86	Incineration[1,2]	I	Baird & McGuire, MA
		II	Hyde Park, NY
		III	Drake, PA
			Westline, PA
		IV	Coleman Evans, FL
			Mowbray Engineering, AL
		V	Arrowhead Refinery, MN
			Fields Brook, OH
			LaSalle Electrical, IL
			Metamora Landfill, MI
			Spiegelberg Landfill, MI
		VI	Sikes Disposal Pit, TX
	Solidification[1,2]	IV	Mowbray Engineering, AL
			Pepper's Steel, FL
			Sapp Battery, FL
		V	Burrows Sanitation, MI
			Fields Brook, OH
			Forest Waste, MI
		X	Queen City Farms, WA
	Volatilization/Soil Aeration[3]	I	Tinkham Garage, NH
		II	Caldwell Trucking, NJ
			Metaltec/Aerosystems, NJ
		IV	Hollingsworth Solderless, FL
	Stabilization/Neutralization[4]	II	Marathon Battery, NY
		III	Bruin Lagoon, PA
		VIII	Denver Radium/ROBCO, CO
	Soil Washing/Flushing[3]	I	Tinkham Garage, NH
		X	United Chrome, OR
	Biodegradation	III	Leetown Pesticide, WV
		V	Burlington Northern, MN
	Land Application/Composting[3]	I	Tinkham Garage, NH

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[1] Includes Mowbray Engineering, AL, which will select either incineration or solidification

[2] Includes Fields Brook, OH, which selected both incineration and solidification

[3] Includes Tinkham Garage, NH, which will select either soil washing, aeration, or composting

[4] Includes Denver Radium/ROBCO, CO, which may select stabilization

Exhibit 5
FY 1987 Regional Record of Decision Remedy Selections

REGION ANALYSIS	I	II	III	IV	V	VI	VII	VIII	IX	X	Total
Total # of RODs	3	15	5	11	14	11	3	7	5	1	75
# of RODs Addressing Final Source Control	3	9	2	11	10	7	1	0	0	1	44
# of RODs Selecting No Action Alternative	0	3	1	2	0	1	0	0	0	0	7
# of RODs Selecting Treatment Technology	4	6	2	6	5	4	0	0	0	0	32
# of RODs Selecting Offsite Disposal of Untreated Wastes	0	1	0	0	1	1	0	0	0	0	3
# of RODs Selecting Onsite Disposal of Untreated Wastes	0	3	2	4	9	5	1	0	0	0	24
# of RODs Selecting Alternate Water Supply	1	4	0	4	2	0	0	0	1	1	13
# of RODs Selecting Temporary Onsite Storage	0	0	0	0	0	1	2	5	0	0	8
# of RODs Selecting Ground Water Treatment	3	7	0	5	7	3	1	1	4	1	32

SECTION II

RECORDS OF DECISION ABSTRACTS

Each ROD summary presented in this section consists of the following:

- ROD Abstract - summarizing site location and background information, contaminated media, key contaminants, selected remedial action, and capital and O&M costs.
- Performance Standards or Goals - describing qualitative/quantitative cleanup criteria.
- Institutional Controls - describing site ordered restrictions.
- Key Words - highlighting treatment technologies, contaminated media, key contaminants, and major key word categories for the RODs. A list of RODs by key words is presented in the last section of this document.

RECORDS OF DECISION ABSTRACTS
FY 1987

TABLE OF CONTENTS

SITE NAME/STATE PAGE

** REGION I

Davis Liquid Waste, RI 1
Ottati & Goss/Great Lakes, NH 2
Re-Solve, MA 4

** REGION II

Chemical Control, NJ 6
Cooper Road, NJ 7
Diamond Alkali, NJ 8
Endicott Village Well Field, NY 10
GE Moreau, NY 11
Haviland Complex, NY 12
Katonah Municipal Well, NY 13
Montgomery Township, NJ 14
Renora, Inc., NJ 15
South Brunswick Landfill, NJ 17
Suffern Village Well Field, NY 18
Vega Alta, PR 19
Volney Landfill, NY 20
Waldick Aerospace, NJ 21
Williams Property, NJ 22

** REGION III

Kane & Lombard, MD 23
Palmerton Zinc, PA 24
Presque Isle, PA 25
Saltville Waste Disposal Ponds, VA 26
West Virginia Ordnance Works, WV 27

** REGION IV

Geiger (C&M Oil), SC 29
Gold Coast, FL 30
Independent Nail, SC 32
Newport Dump Site, KY 33
Northwest 58th Street Landfill, FL 34
Palmetto Wood Preserving, SC 35
Parramore Surplus, FL 36
Powersville Landfill, GA 37
Sodyeco, NC 38
Tower Chemical, FL 40
Tri-City Conservation, FL 42

RECORDS OF DECISION ABSTRACTS
FY 1987

TABLE OF CONTENTS
(Continued)

SITE NAME/STATE | PAGE

** REGION V
FMC Corporation, MN 43
Industrial Excess Landfill, OH 45
Johns-Manville, IL 46
Laskin/Poplar, OH 47
Liquid Disposal, MI 48
Marion/Bragg Landfill, IN 49
New Brighton/Arden Hills/St. Anthony, MN 50
New Brighton/Twin Cities Army Ammunition Plant, MN 51
Northern Engraving, WI 53
Northside Sanitary Landfill/Environmental Conservation and Chemical Corporation, IN 55
Rose Township, MI 57
Schmalz Dump, WI 58
Seymour, IN 59

** REGION VI
Bayou Bonfouca, LA 61
Bayou Sorrel, LA 63
Cleve Reber, LA 65
Compass Industries Landfill, OK 67
Crystal City Airport, TX 68
Gurley Pit, AR 69
Hardage/Criner, OK 70
Highlands Acid Pit, TX 72
Mid-South Wood Products, AR 73
Petro-Chemical Systems, TX 75
Sand Springs Petrochemical Complex, OK 76

** REGION VII
Conservation Chemical, MO 77
Minker/Stout/Romaine Creek - Romaine Creek Portion, MO 79
Minker/Stout/Romaine Creek - Stout Portion, MO 80

** REGION VIII
Central City/Clear Creek, CO 81
Denver Radium I/12th and Quivas, CO 82
Denver Radium II/11th and Umatilla, CO 84
Denver Radium III, CO 86
Denver Radium/Card Property, CO 88

DAVIS LIQUID WASTE, RI
First Remedial Action
September 29, 1987

ROD ABSTRACT

The Davis Liquid Waste site is located in a rural section of the Town of Smithfield, Providence County, Rhode Island. The 15-acre site, bounded on the north and south by wetlands and swamp areas, is within one-half mile of 38 homes. Throughout the 1970s, the site served as a disposal location for various hazardous liquid and chemical wastes including: paint and metal sludge, oily wastes, solvents, acids, caustics, pesticides, phenols, halogens, metals, fly ash, and laboratory pharmaceuticals. Liquid wastes were accepted at the site in drums and bulk tank trucks and then dumped directly into unlined lagoons and seepage pits. This dumping has resulted in soil, surface water, and ground water contamination that still persists. Periodically the semi-solid lagoon materials were excavated and dumped in several onsite locations and covered with available site soil. Other site operations included the collection of junked vehicles and machine parts, metal recycling, and tire shredding. In 1978, the discovery of offsite well contamination prompted the State Superior Court to prohibit dumping of hazardous substances on the Davis property. Presently 11 acres of the property operate as a staging and storage area for approximately 30,000,000 to 35,000,000 tires. In July 1985, a removal action shipped 600 intact and crushed drums offsite. Significant quantities of hazardous substances still exist in the ground water, surface water, sediments, and soils. The primary contaminants of concern include: VOCs, organics, inorganics, metals, arsenic, benzene, TCE, and 1,1-DCE.

The selected remedial action for this site includes: excavation of 25,000 yd^3 of raw waste and contaminated soils for onsite incineration; treated soil will be tested and used as backfill or placed in an onsite RCRA landfill; implementation of an alternate water supply; and onsite ground water treatment using air stripping and carbon adsorption, with reinjection to the aquifer. The estimated present worth cost for this remedial action is $27,392,000.

PERFORMANCE STANDARDS OR GOALS: To attain the ground water MCL target cleanup levels and the 10^{-5} risk level, it is necessary to treat 25,000 yd^3 of contaminated soil to levels <2.0 mg/kg total VOCs and benzene, and DCE and TCE to 5.0 ug/l each.

INSTITUTIONAL CONTROLS: Not applicable.

KEYWORDS: Acids; Air Stripping; Alternate Water Supply; ARARs; Benzene; Carcinogenic Compounds; Clean Water Act; Direct Contact; Drinking Water Contaminants; Excavation; Ground Water; Ground Water Treatment; Incineration; Inorganics; Lead; MCLs; Metals; O&M; Oils; Onsite Discharge; Onsite Disposal; Onsite Treatment; Pesticides; Phenols; Public Exposure; RCRA Closure Requirements; Safe Drinking Water Act; Sediments; Sludge; Soil; Solvents; State Criteria; TCE; Treatment Technology; VOCs; Wetlands.

OTTATI & GOSS/GREAT LAKES, NH
First Remedial Action - Final
January 16, 1987

ROD ABSTRACT

The Ottati and Goss/Great Lakes Container Corporation site (GLCC) is located in Kingston, New Hampshire, west of Route 125. The study area for the Remedial Investigation/Feasibility Study (RI/FS) includes the 35-acre OG site, a marsh area east of Route 125, and Country Pond adjacent to the marsh area. North Brook and South Brook drain the marsh at its interface with Country Pond. From the late 1950s through 1967, Conway Barrel & Drum Company (CBD) owned the site and performed drum reconditioning operations. The reconditioning operations included caustic rinsing of drums and disposal of the rinse water in a dry well near South Brook. As a result of State concerns regarding the proximity of the dry well to South Brook and complaints of resulting South Brook and Country Pond pollution, CBD established leaching pits in an area removed from South Brook. The State's Water Supply and Pollution Control Commission (WSPCC) reported onsite runoff and seepage from the leaching pits draining into South Brook and eventually into Country Pond. Reports included fish kills in Country Pond, dying vegetation along South Brook and skin irritation of swimmers in Country Pond. In May 1973, International Mineral & Chemical Corporation (IMC) purchased the drum and reconditioning plant, and owned and operated it until 1976. Beginning in 1978, heavy sludges (approximately thirty 55-gallon drums per month) from the wash tank and drum drainings, as well as residues from incinerator operations, were brought to the OG site for processing. After OG operations ceased in June 1979, the New Hampshire Bureau of Solid Waste Management ordered the owners and operators of the site to remove the drums and cease site operations. Contamination has been identified both onsite and offsite in the ground water, surface water, soil, and sediments. The primary contaminants of concern include: VOCs, acid and base/neutral compounds, PCBs, pesticides, metals, and cyanide.

The selected remedial action includes: excavation of approximately 5,000 yd^3 of PCB contaminated soil and sediments followed by destruction of contaminants by incineration; aeration (low temperature thermal stripping) of approximately 14,000 yd^3 of contaminated soil; installation of ground water extraction and treatment systems with upgradient discharge possibly to local surface waters; site grading and disposal of contaminated GLCC building materials with site covering; installation of ground water and Country Pond monitoring systems; and establishment of a drinking water surveillance program. The estimated capital cost for this remedy is $8,592,500 with annual O&M of $1,735,000.

OTTATI & GOSS/GREAT LAKES, NH
First Remedial Action - Final
(Continued)

PERFORMANCE STANDARDS OR GOALS: Ground water will be restored to attain the cancer risk level of 10^{-5}. Specific ground water cleanup goals include: 1,2-DCE 3.8 ug/l; TCE 26.0 ug/l; and PCE 6.7 ug/l. Soils will be excavated to total VOCs 1.0 mg/kg and PCBs 20.0 mg/kg.

INSTITUTIONAL CONTROLS: Not applicable.

KEYWORDS: Aeration; ARARs; Capping; Excavation; Ground Water; Ground Water Monitoring; Ground Water Treatment; Incineration; Metals; O&M; Offsite Discharge; Organics; PCBs; Pesticides; Sediments; Soil; Surface Water; Treatment Technology; VOCs.

RE-SOLVE, MA
Second Remedial Action - Final
September 24, 1987

ROD ABSTRACT

The Re-Solve, Inc. site is a former waste chemical reclamation facility situated on six acres of land in North Dartmouth, Massachusetts. Bounded by wetlands to the north and east, the land surrounding the site is predominantly zoned for single family residential use. All residences obtain their water from private wells located on their property. The Copicut River, located about 500 feet from the site, has been designated for the protection and propagation of fish, other aquatic life, wildlife, and primary and secondary contact recreation. Between 1956 and 1980, Re-Solve, Inc. handled a variety of hazardous materials including solvents, waste oils, organic liquids and solids, acids, alkalies, inorganic liquids and solids, and PCBs. Residues from the distillation tower, liquid sludge waste, impure solvents, and burnt tires were disposed of in four onsite unlined lagoons. The lagoon contents were burned periodically to reduce the VOC content. An oil waste that accumulated at the bottom of the degreaser distillation still was disposed on one portion of the site through landfarming. This oil waste was also spread throughout the site to control dust. Cooling water from the distillation tower was discharged to a shallow, onsite lagoon. In 1974, the Massachusetts Division of Water Pollution Control issued Re-Solve, Inc. a license to collect and dispose of hazardous waste. In December 1980, the Massachusetts Division of Hazardous Waste agreed to accept Re-Solve's offer to surrender its disposal license on the condition that all hazardous waste be removed from the site. The contents of the four onsite lagoons were not removed. Currently ground water, soil, and sediments are contaminated with VOCs, PCBs, and other organics. Contaminants leaked into the ground water, soil, and sediments. The primary contaminants of concern are PCBs and VOCs.

The selected remedial action includes: excavation of 22,500 yd^3 of PCB-contaminated soil located above the ground water table with onsite treatment in a mobile dechlorination facility and placement back onsite with 18 inches of gravel capping; excavation of 3,000 yd^3 of PCB-contaminated sediments located in wetland resource areas, with onsite treatment in the mobile dechlorination facility and placement back onsite with 18 inches of gravel capping; conduction of dechlorination pilot-scale studies to determine implementability of full-scale level (if dechlorination is not implementable, onsite incineration may be used); implementation of a wetland restoration program; ground water pump and treatment using precipitation, air stripping, and activated carbon filtration with discharge back into the aquifer via a distribution system (soil within these ground water treatment areas will be flushed to reduce VOCs); implementation of pilot ground water treatability studies; ground water, surface water and wetlands monitoring; and implementation of ground water use institutional controls. The estimated capital cost for dechlorination is $7,332,900 with present worth O&M of $1,097,000. If incineration is substituted for dechlorination, the estimated capital cost would be $11,841,900 with present worth O&M of $5,121,000.

RE-SOLVE, MA
Second Remedial Action - Final
(Continued)

PERFORMANCE STANDARDS OR GOALS: PCB contaminated soils above the water table will be excavated and treated to concentrations of 25.0 mg/kg or less. This cleanup level corresponds to a 10^{-5} health-based risk level. An excavation and treatment cleanup level of 1.0 mg/kg for PCB contaminated wetland and tributary sediments has also been selected. TCE, PCE, and methylene chloride will be treated to 5.0 ug/l, the MCL value for ground water. These three indicator chemicals will reduce VOC ground water contamination to the 10^{-5} health-based risk level. Since PCBs will remain present in onsite ground water in excess of the 10^{-5} health-based risk level, institutional ground water usage controls will be implemented.

INSTITUTIONAL CONTROLS: Onsite institutional ground water usage controls will be implemented.

KEYWORDS: Air Stripping; ARARs; Capping; Carcinogenic Compounds; Clean Air Act; Clean Water Act; Direct Contact; Excavation; Granular Activated Carbon; Ground Water; Ground Water Monitoring; Ground Water Treatment; Institutional Controls; Land Treatment; MCLs; O&M; Onsite Discharge; Onsite Treatment; Onsite Disposal; Organics; PCBs; Public Exposure; Safe Drinking Water Act; RCRA Closure Requirements; Sediments; Soils; Soil Flushing; State Criteria; Surface Water; TCE; Treatability Studies; Treatment Technology; Toxic Substances Control Act; VOCs; Water Quality Criteria; Wetlands.

CHEMICAL CONTROL, NJ
Second Remedial Action
September 23, 1987

ROD ABSTRACT

The Chemical Control Corporation (CCC) site, consisting of 2.2 acres and a portion of the Elizabeth River, is located in Union County, New Jersey. The site area, formerly a marsh, is flat and barely above sea level. The surrounding area is mostly industrial, however, one residence is within 200 feet of the site. Densely populated neighborhoods are located across the Elizabeth River. From 1970 to 1978, CCC operated as a hazardous waste storage, treatment, and disposal facility accepting various types of chemicals including: acids, arsenic, bases, cyanides, flammable solvents, PCBs, compressed bases, biological agents, and pesticides. Throughout its operations, CCC was cited for discharge and waste storage violations. In March 1979, the State of New Jersey initiated a site cleanup of bulk solids and liquids, drums found at and below the surface, gas cylinders, infectious wastes, radioactive wastes, highly explosive liquids, debris, and tanks. Excavated soil areas were replaced with a 3-foot gravel cover. An April 1980 explosion and fire interrupted the site cleanup and created additional cleanup needs by destroying the site and reportedly launching drums of burning waste into the air. From November 1980 until July 1981, the State operated a ground water recovery and treatment system. Initial Remedial Measures conducted at the site have mitigated the immediate hazards. The site closure RI, completed in July 1986, determined that soils beneath those previously removed are highly contaminated with a variety of organic compounds and, to a lesser degree, with metals. Sediments along the Elizabeth River are also contaminated (potentially from other sources in addition to Chemical Control). However, the greatest potential risk from this site is associated with the possible exposure of the contaminated soil. The primary contaminants of concern affecting the soil include: VOCs, organics, pesticides, acid and base/neutral extractables, and metals.

The selected remedial action for this site includes: treatment of approximately 18,000 yd^3 of contaminated soils using in-situ fixation (solidification); removal of debris including drill cuttings, items recovered from the river under the IRM, used disposable equipment, and the decontamination pad; monitoring well development water and sealing of the sanitary sewer line under the site; and repair of the site/river berm. The estimated capital cost for this remedial action is $7,208,000 with annual O&M of $57,400 for years 1-5 and $22,400 for years 6-30.

PERFORMANCE STANDARDS OR GOALS: Remediation efforts will comply with the Ambient Water Quality Criteria (AWQC) for the protection of saltwater aquatic life. There are no ARARs for the chemical concentrations in soil.

INSTITUTIONAL CONTROLS: Not applicable.

KEYWORDS: ARARs; Flood Plain; Ground Water; Ground Water Monitoring; Metals; Onsite Treatment; Organics; Pesticides; Public Exposure; Sediments; Soil; Solidification; Treatability Studies; Treatment Technology; VOCs; Water Quality Criteria.

COOPER ROAD, NJ
First Remedial Action - Final
September 30, 1987

ROD ABSTRACT

The Cooper Road site consists of an approximately 100-square foot dumping area located in Voorhees Township, Camden County, New Jersey. In 1982, several dozen, 1-to-2 ounce glass vials containing unknown liquids were discovered at the site. Some vials were broken, but most remained intact. Sampling of the vials by the New Jersey Department of Environmental Protection (NJDEP) indicated the presence of benzene, ethylbenzene, xylene, naphthalene, and other contaminants. NJDEP requested the owners of the property perform a complete and total removal of all vials. No response from the site owners followed. The site changed ownership in June 1983, and upon request by NJDEP, the new owners removed all vials and six inches of underlying soil. Subsequent sampling of soil and ground water indicate no contaminants present above normal background levels.

EPA determined that no significant risk or threat to public health and the environment exists and therefore no further action will be taken at this site. There are no implementation issues or costs associated with this no action remedy.

PERFORMANCE STANDARDS OR GOALS: Chemical-specific goals met by this no action remedy were not specified.

INSTITUTIONAL CONTROLS: Not applicable.

KEYWORDS: No Action Remedy.

DIAMOND ALKALI, NJ
First Remedial Action
September 30, 1987

ROD ABSTRACT

The Diamond Shamrock site, also referred to as Diamond Alkali and the 80 Lister Avenue property, is located in the Ironbound section of Newark, New Jersey. The 3.4-acre property is three miles upstream from the mouth of Newark Bay and is surrounded by the former Sergeant Chemical Company site (subsequently purchased by Diamond Shamrock), the Duralac Company, a Sherwin-Williams Company property and the Passaic River. The site has been used for chemical manufacturing by numerous companies for more than 100 years. The mid-1940s marked the beginning of the manufacturing operations related to the current site conditions and included the production of DDT and phenoxy herbicides. The Diamond Shamrock Company acquired the property in 1951 and produced various chemicals and pesticides until 1969, when it was shut down. Subsequent owners remained on the property until 1983, when EPA sampled the site and revealed high levels of dioxin. The dioxin discovery led to the excavation and securing of the site. All exposed soils were covered with geofabric to prevent potential migration of contamination, and guards were placed at the site. The primary contaminants of concern affecting soil, structures, ground water, and air include dioxin and DDT.

The selected remedial action for this site includes: construction of a slurry wall and a 100-year flood wall dike; RCRA capping; disassembly and decontamination of nonporous permanent structures for offsite reuse, recycling, or disposal; offsite transportation of drums containing hazardous substances with less than 1 ppb of dioxin for treatment or disposal; demolition of all remaining onsite structures; onsite security of all materials contaminated above 1.0 ug/kg with dioxin; stabilization and immobilization of the contents of the remaining drums with dioxin contaminated materials; onsite placement and capping of sludge from waste water treatment until an alternative method is identified; identification of the location of underground contaminant conduits with subsequent plugging and rerouting of active systems; hauling, emptying, spreading, and compaction of the contaminated materials stored at 120 Lister Avenue with decontamination and shipping of containers for offsite reuse, recycling, or disposal; installation, operation, and maintenance of a ground water withdrawal system; installation, operation, and maintenance of a treatment system for ground water and other aqueous liquids; implementation of monitoring, contingency, O&M, and site security plans; and performance of a feasibility study every two years following the implementation of the remedy. The estimated capital cost for this remedial action is $8,068,000 with annual O&M of $261,000.

PERFORMANCE STANDARDS OR GOALS: The criteria for the protection of human health will be based on a level of protection corresponding to a 10^{-6} increased cancer risk. The relevant and appropriate corresponding ground water criteria for dioxin, DDT, and hexachlorobenzene include: 1.4×10^{-5} ug/l; 2.4×10^{-2} ug/l; and 7.4×10^{-1} ug/l, respectively. The cleanup goal for dioxin in soil and structures is 1.0 ug/kg.

INSTITUTIONAL CONTROLS: Not applicable.

KEYWORDS: Air; ARARs; Capping; Carcinogenic Compounds; Decontamination; Dioxin; Direct Contact; Flood Plain; Ground Water; Ground Water Monitoring; Ground Water Treatment; Interim Remedy; O&M; Pesticides; Public Exposure; RCRA; Slurry Wall; Soil; State Criteria; VOCs.

ENDICOTT VILLAGE WELL FIELD, NY
First Remedial Action
September 25, 1987

ROD ABSTRACT

The Endicott Village Well Field site is located in Endicott Village, Broome County, New York. The site consists of a Ranney well and its zone of influence on area ground water. Landfills and industrial tracts of land are located to the northwest and west of the study area including the Endicott Landfill, identified as a potential source of contamination. In the 1950s, the Ranney Well Collector Corporation developed the well for use by the Village of Endicott. After a May 1981 chemical spill nearby, the well was sampled and found to contain vinyl chloride and trace amounts of other VOCs. Remedial actions undertaken by the Endicott Public Works Department included sampling and eventual closing of radial collectors from the Ranney well. Additionally, an aeration system was installed in the well to reduce vinyl chloride levels. Subsequent actions undertaken included the installation of monitoring wells and a purge well between the Ranney well and the Endicott Landfill. Further studies are currently being conducted to determine the source of contamination and to develop final aquifer restoration alternatives. The studies will be addressed in a subsequent Record of Decision. The primary contaminants of concern are vinyl chloride and other VOCs.

The selected remedial action for this operable unit includes: installation and operation of an air stripping system to remove VOCs from the Ranney well; continued operation of the purge well located between the Ranney well and the Endicott Landfill; and continued monitoring of the Ranney well to detect the presence of vinyl chloride and other VOCs. The estimated capital cost for this remedial action is $1,200,000 with annual O&M of $147,000.

PERFORMANCE STANDARDS OR GOALS: Ground water will be treated to MCL values, which include vinyl chloride 2.0 ug/l, 1,2-dichloroethane 5.0 ug/l, and trichloroethane 5.0 ug/l. Tetrachloroethene 0.88 ug/l and 1,1,2-trichloroethane 0.6 ug/l will meet Federal Water Quality Criteria established by the 10^{-6} health-based cancer risk level. Vinyl chloride air emission will meet 10.0 ppm, the National Emission Standard of the Clean Air Act.

INSTITUTIONAL CONTROLS: Not applicable.

KEYWORDS: Air Stripping; ARARs; Clean Air Act; Clean Water Act; Drinking Water Contaminants; Ground Water; Ground Water Monitoring; Ground Water Treatment; MCLs; O&M; Onsite Discharge; Onsite Treatment; Safe Drinking Water Act; State Criteria; VOCs; Water Quality Criteria.

GE Moreau, NY
First Remedial Action
July 13, 1987

ROD ABSTRACT

The GE Moreau site, located in the Town of Moreau, Saratoga County, New York, is situated in a semi-rural setting with single family houses nearby. These houses rely on individual drinking water wells for their water supply. From 1958 to 1968, the site was used as an industrial waste disposal site. An evaporation pit received approximately 452 tons of waste material generated by the General Electric Company (GE). The waste materials include TCE, PCBs, spent solvents, oils, sludge, and other miscellaneous waste. In late 1982, elevated levels of TCE were found onsite in the ground water. The Town of Moreau installed activated carbon filters on the drinking water systems of 70 homes believed to be downgradient of the site and therefore affected, or potentially affected, by contaminants. In the summer of 1983, EPA initiated negotiations with GE to address the offsite contamination problems. The primary contaminants of concern affecting the ground water, surface water and river include: TCE, dichloroethylene, VOCs, and organics. Approximately 8,600 yd^3 of soil are contaminated with PCBs.

The selected remedial action for this site includes: utilization of the soil-bentonite cutoff wall around the former disposal area to contain the source of offsite ground water contamination (constructed in 1984); utilization of the air stripping system to remove VOCs offsite at Reardon Brook (installed in fall 1985); removal of 8,600 yd^3 of PCB-contaminated soil adjacent to the disposal area and placement within the slurry wall containment area (completed in late summer 1985); capping of the disposal area in conformance with New York State Department of Environmental Conservation requirements; and extension of public water mains to approximately 100 homes. The estimated capital cost for this remedial action is $16,382,000 with annual O&M of $78,000.

PERFORMANCE STANDARDS OR GOALS: Remediation will attain the proposed MCL value for TCE 5.0 ug/l and the New York State Ambient Water Quality value for trans-1,2-dichloroethylene 50.0 ug/l. Soil cleanup goals were not specified.

INSTITUTIONAL CONTROLS: The withdrawal of ground water within the contaminant plume will be restricted and a pipeline installation permit will be required.

KEYWORDS: Air Stripping; Alternate Water Supply; ARARs; Capping; Drinking Water Contaminants; Excavation; Ground Water; Ground Water Monitoring; Ground Water Treatment; Institutional Controls; MCLs; O&M; Offsite Discharge; Offsite Treatment; Onsite Containment; Onsite Treatment; Organics; PCBs; Plume Management; Safe Drinking Water Act; Sludge; Slurry Wall; Soil; State Criteria; VOCs.

HAVILAND COMPLEX, NY
First Remedial Action - Final
September 30, 1987

ROD ABSTRACT

The Haviland Complex site consists of a planned development comprising 275 acres in the town of Hyde Park, New York. This development contains an apartment complex, a junior high school, an elementary school, a shopping center, and a number of private homes. Beginning in October 1981, a local resident filed a complaint with the Dutchess County Health Department noting that his well water was foaming. Other complaints of water quality supply problems prompted a sampling program and sanitary survey of the Haviland area. Results of these tests indicated failure in nearby car wash and laundromat septic and sewage systems. In 1982, the laundromat installed a sand filter and a new tile field to handle the laundry effluent. Due to increasing concern over potential ground water contamination by volatile organic chemicals, the New York State Department of Health (NYDOH) began sampling wells in December 1982. In January 1983, the laundromat was ordered to disconnect the dry cleaning unit from the recently upgraded sewer disposal system and dispose of all spent cleaning fluids offsite with a licensed disposal firm. Continued evidence of contamination led to installation of two spray aeration systems in Haviland Complex wells. The primary contaminants of concern include: VOCs (TCE, DCE, toluene, benzene, vinyl chloride, 1,1,1-trichloroethane) and metals (cadmium, chromium, mercury, lead). Total cancer risk for each organic chemical ranged from 10^{-3} to 10^{-6}.

The selected remedial action for this site includes: connection of affected and potentially affected Haviland Complex residences to the Harbound Hills water distribution system; ground water extraction and treatment using air stripping with discharge to surface water; pumping and cleaning out contaminated sediments from the local septic disposal system; and implementing a monitoring system to ensure effectiveness of the remedy. The estimated capital cost for this remedial action is $1,257,500 with annual O&M of $105,500.

PERFORMANCE STANDARDS OR GOALS: Specific treatment goals will be determined during pilot studies.

INSTITUTIONAL CONTROLS: Not applicable.

KEYWORDS: Air Stripping; Alternate Water Supply; ARARs; Benzene; Clean Water Act; Chromium; Drinking Water Contaminants; Ground Water; Ground Water Monitoring; Ground Water Treatment; MCLs; Metals; O&M; Onsite Discharge; Onsite Treatment; Safe Drinking Water Act; State Criteria; Sediments; TCE; Toluene; VOCs.

KATONAH MUNICIPAL WELL, NY
First Remedial Action - Final
September 25, 1987

ROD ABSTRACT

The Katonah Municipal Well site is located in the Village of Katonah in the Town of Bedford, Westchester County, New York. The well is situated on a peninsula owned by the City of New York that extends into the Muscoot Reservoir. In 1978, the Westchester County Department of Health (WCDH), acting on Putnam County Health Department findings, sampled the Katonah well and other local wells for contamination. These samples revealed the presence of tetrachloroethylene (PCE) and other volatile organic chemicals in the well water. These contaminants were traced to a local septic waste collector who was disposing of wastes taken from several Katonah dry cleaning establishments. In 1978, the Katonah well was closed, and source control measures were initiated requiring dry cleaning establishments to pump out their septic systems and modify solvent disposal techniques. Attempts by WCDH and the Town of Bedford to remove contamination from the affected aquifer failed. The primary contaminant of concern is PCE.

The selected remedial action for this site includes: installation of a new production well adjacent to the abandoned well; filling and sealing of the abandoned Katonah well; installation and operation of an onsite air stripping facility to remove PCE and other volatiles from the aquifer with discharge of treated water to the Bedford Consolidated Water District distributors system; establishment of a monitoring program to detect residual contamination of treated water; and recommendations to the Town of Bedford to remove trash and debris located on the peninsula. The estimated capital cost of this remedial action is $1,365,000 with annual O&M of $296,000.

PERFORMANCE STANDARDS OR GOALS: With the absence of an MCL for PCE, the target treatment level has been established as less than 1.0 ug/l or nondetectable, based on the 10^{-6} cancer risk level.

INSTITUTIONAL CONTROLS: Not applicable.

KEYWORDS: Air Stripping; ARARs; Carcinogenic Compounds; Clean Water Act; Direct Contact; Drinking Water Contaminants; Ground Water; Ground Water Monitoring; Ground Water Treatment; O&M; Offsite Disposal; Onsite Treatment; PCE; State Criteria; Water Quality Criteria.

MONTGOMERY TOWNSHIP, NJ
First Remedial Action
September 29, 1987

ROD ABSTRACT

The Montgomery Township Housing Development (MTHD) is a 72-acre tract of land located in Somerset County, New Jersey. The housing development consists of 71 home sites. The original potable water source for each home was a private well drawing from the underlying aquifer. In 1978, the Borough of Rocky Hill, which is located near the site, sampled ground water from the Borough well and found it to be contaminated with trichloroethylene (TCE). Testing continued through 1983, and repeated evidence of TCE contamination prompted the New Jersey Department of Environmental Protection (NJDEP) to sample the MTHD well. Results indicated the presence of TCE and other volatile organics in that and other surrounding wells. In 1981, 20 homes in the MTHD were connected to the Elizabethtown Water Company water mains. To date, 38 residences have been hooked up. Due to the similarity of contaminants and the proximity of the MTHD and Rocky Hill Municipal Well Superfund sites, a combined Remedial Investigation/Feasibility Study (RI/FS) is being performed. This ROD focuses only on an alternate water supply for MTHD. The alternate water supply for the Rocky Hill Superfund site was installed in a separate action undertaken by the town. The primary contaminant of concern is TCE, with secondary contaminants being other volatile organics.

The selected first operable unit remedial action is to extend the Elizabethtown Water Company distribution system to currently or potentially affected residents of MTHD. The estimated capital cost of the alternative is $319,000 with no annual O&M.

PERFORMANCE STANDARDS OR GOALS: The water supply will be regularly monitored for contaminant compliance with MCLs.

INSTITUTIONAL CONTROLS: Not applicable.

KEYWORDS: Alternate Water Supply; ARARs; Carcinogenic Compounds; Direct Contact; Drinking Water Contaminants; Ground Water; Ground Water Monitoring; MCLs; Safe Drinking Water Act; State Criteria; TCE; VOCs.

RENORA INC., NJ
First Remedial Action
September 29, 1987

ROD ABSTRACT

The Renora Inc. site, in Middlesex County, New Jersey, occupies a one-acre parcel of land in an area zoned for light industrial use. Within 2,000 feet of the site is a residential area with a nursery school, a senior citizens center and an apartment complex. The site consists of relatively flat land built up from a 100-year flood plain with three to twelve feet of demolition debris. From 1978 to 1982, Renora, Inc., certified as a collector/hauler of waste oils, transported and accepted materials containing hazardous substances for transfer, storage, blending, and ultimately disposal through abandonment at the site. State and local inspection reports indicate that the site was poorly maintained throughout the period of its operation. In July 1978, the New Jersey Department of Environmental Protection (NJDEP) detected several minor spills and determined that Renora, Inc. was acting as a Special Waste Transfer Station without proper registration. Subsequently Renora was ordered to remove all contaminated soil and drums. In May 1979, drums were leaking on the property. In March 1980, NJDEP ordered the cessation of all operations and the implementation of remedial actions at the site. By June 1980, operations had ceased, but no remedial action had taken place. In November 1980, NJDEP revoked Renora's registration to collect and haul solid waste. The site was abandoned by June 1982. A removal action, initiated in October 1984, disposed of 33,000 gallons of liquid waste, 28,000 gallons of PCB-contaminated waste oil, and 1,060 yd^3 of soil offsite. The primary contaminants of concern affecting the soil and ground water include: PCBs, PAHs, VOCs, organics, metals, PCE, phenols, and pesticides.

The selected remedial action for this site includes: excavation of all PCB-contaminated soil containing concentrations above 5 mg/kg (1,100 yd^3) with offsite disposal (landfill or incineration); biodegradation of all PAH-contaminated soil containing concentrations above 10 mg/kg (4,400 yd^3); use of ground water as an irrigation medium for the biodegradation system; and backfilling, grading, and revegetation. The present worth cost for this remedial action is $1,401,000 or $6,021,000 for landfilling and incineration, respectively.

PERFORMANCE STANDARDS OR GOALS: Target treatment/remedial levels for soil based on State action levels/chemical class cleanup objectives include: total VOCs 1.0 mg/kg; total PAHs 10.0 mg/kg; total petroleum hydrocarbons 100.0 mg/kg; cadmium 3.0 mg/kg; zinc 350.0 mg/kg; and PCBs 5.0 mg/kg. Target treatment/residual levels for ground water contaminants include: total VOCs 50.0 mg/l; arsenic 50.0 mg/l; cadmium 10.0 mg/l; $chromium^{+6}$ 50.0 mg/l; and lead 50.0 mg/l.

INSTITUTIONAL CONTROLS: Not applicable.

RENORA INC., NJ
First Remedial Action
September 29, 1987
(continued)

KEYWORDS: ARARs; Clean Closure; Direct Contact; Excavation; Flood Plain; Ground Water; MCLs; Metals; O&M; Offsite Disposal; Offsite Treatment; Organics; PAHs; PCBs; PCE; Pesticides; RCRA; Safe Drinking Water Act; Soil; State Criteria; Toxic Substances Control Act; Treatability Studies; Treatment Technology; VOCs.

SOUTH BRUNSWICK LANDFILL, NJ
Second Remedial Action - Final
September 30, 1987

ROD ABSTRACT

The Browning-Ferris Industries South Brunswick Landfill (SBL) is a closed landfill situated on approximately 68 acres in Middlesex County, New Jersey. The landfill is located adjacent to a school, park, and private residences, although a substantial portion of the landfill is surrounded by woods. The site is in close proximity to a brook that feeds into a public drinking water supply ten miles downstream. For more than 20 years, the site operated under two separate owners as a solid waste landfill that received municipal refuse, pesticides, chemical wastes, and hazardous wastes. Pursuant to a July 1978 closure order from the New Jersey Department of Environmental Protection (NJDEP) the site was officially closed in December 1978. In June 1980, EPA conducted a site investigation that revealed elevated levels of VOCs and iron in ground water and surface water. The selected containment remedy has been in place and operational since September 1985. This Record of Decision (ROD) evaluates the remedy selection process in the context of SARA.

The selected remedial action for this site includes onsite containment (leachate collection/treatment system, slurry wall, clay cap, and gas venting system), which was initiated in May 1983 and completed on September 1985; and post-remedial ground water, surface water, and air monitoring. No costs were provided.

PERFORMANCE STANDARDS OR GOALS: NJDEP will provide EPA with chemical/ambient-specific levels upon evaluation of the initial sampling results from the post-remedial monitoring program.

INSTITUTIONAL CONTROLS: Not applicable.

KEYWORDS: ARARs; Capping; Clean Water Act; Ground Water Monitoring; Leachate Collection/Treatment; O&M; RCRA.

SUFFERN VILLAGE WELL FIELD, NY
First Remedial Action - Final
September 25, 1987

ROD ABSTRACT

The Suffern Village Well Field site is located in Rockland County, New York. The Village of Suffern operates four production wells that provide water to approximately 12,000 people. In September 1978, monitoring activities detected 1,1,1-trichloroethane (TCA), a common industrial chemical compound, and trace VOCs in the municipal water distribution system. In December 1978, wells, 1, 2, and 4 had TCA levels of 90-114 ug/l and were shut down. Municipal water supply requirements were met by well 3. A subsequent survey identified the Tempcon Corporation, a small local oil burner reconditioning business, as the potential source of TCA. In January 1979, Tempcon ceased using a seepage disposal pit and TCA-based cleaning products. By March 1979, removal of waste material and excavation and devolatilization of contaminated soils were completed. A spray aeration treatment system was then implemented to remove TCA from the municipal water supply. Monitoring results indicate TCA levels in the four wells are now below the New York State Department of Environmental Conservation (NYSDEC) guideline of 50.0 ug/l. A ground water model was used to predict that the aquifer would be below acceptable levels within a reasonable time period (approximately 2 years). During this time, institutional controls have been recommended to restrict site access.

The selected remedial action for this site is no further action with ground water monitoring to assure the presence of TCA at concentrations below the New York State Department of Health action level. The concentrations in the aquifer are expected to be below this action level via a one-year natural attenuation. The estimated present worth cost for this ground water monitoring is $311,000.

PERFORMANCE STANDARDS OR GOALS: The ground water level for TCA complies with the NYSDEC guideline of 50.0 ug/l. This State standard is more stringent than the Federal drinking water standard.

INSTITUTIONAL CONTROLS: Site access restrictions have been recommended.

KEYWORDS: ARARs; Ground Water; Ground Water Monitoring; No Action Remedy; Organics; State Criteria; VOCs.

VEGA ALTA, PR
First Remedial Action
September 29, 1987

ROD ABSTRACT

The Vega Alta Public Supply Wells site is a public water supply well field located in the municipality of Vega Alta, Puerto Rico, approximately 32 km west of San Juan where ground water is the primary source of water. The well field consists of eight active wells and two inactive wells. It currently supplies about 3,800,000 gallons per day of water to Vega Alta and surrounding residential areas. The Puerto Rico Aqueduct and Sewer Authority (PRASA) is responsible for operation and maintenance of the public water supply system. The first indication of contamination was discovered in June 1983, when a survey of public water wells made by the U.S. Geological Survey detected 574 ug/l of trichloroethylene (TCE) in the Ponderosa public supply well. Other VOCs were detected at lower concentrations in non-public wells in the well field system and ground water contamination was suspected. In June and August of 1983, Ponderosa and well GE 1 were shut down by PRASA because of contamination, respectively. This shut down caused a potential water supply shortage in Vega Alta. PRASA constructed well Bajura 3 to eliminate the shortage. In 1984, an air stripper was constructed at the Ponderosa well and operated until May 1985 when technical problems arose with the air stripper. Currently, ground water is contaminated with VOCs, which include: 1,1,1-trichloroethene, tetrachloroethene, 1,2-dichloroethene, and 1,1-dichloroethene.

The selected remedial action for this site includes: treatment of PRASA wells GE 1, GE 2, and Bajura 3 by individual treatment systems with discharge of treated effluent into the PRASA distribution system for public use; treatment of Ponderosa well by scaling pretreatment and air stripping with discharge to Honda Creek; shutting down of Monterrey 2 and G&M private wells with hookup to the PRASA distribution system; and initiation of a subsequent RI/FS to fully assess and evaluate the source(s) of contamination. The estimated capital cost for this remedial action is $4,106,000 with annual O&M of $581,000.

PERFORMANCE STANDARDS OR GOALS: Individual well treatment systems will attain the 10^{-6} health-based risk level and MCL values. Chemical-specific goals include: PCE 0.7 ug/l; 1,1-DCE 0.23 ug/l; benzene 0.7 ug/l; and TCE 2.8 ug/l.

INSTITUTIONAL CONTROLS: Not applicable.

KEYWORDS: Air Stripping; Alternate Water Supply; ARARs; Clean Water Act; Direct Contact; Drinking Water Contaminants; Ground Water; Ground Water Monitoring; Ground Water Treatment; O&M; Offsite Discharge; Offsite Disposal; Onsite Treatment; PCE; Publically-Owned Treatment Works; TCE; VOCs.

VOLNEY LANDFILL, NY
First Remedial Action
July 31, 1987

ROD ABSTRACT

The Volney Landfill site, located in the Town of Volney, Oswego County, New York, is a 55-acre, unlined municipal landfill. From 1969 until 1983, municipal waste disposal operations occurred at the site. Most of the waste disposed at the site consisted of typical residential, commercial, institutional, and light industrial waste. However, between March 1974 and January 1975, Pollution Abatement Services, a hazardous waste incineration facility, was permitted to dispose of approximately 8,000 drums containing only residue coatings. Allegedly 50 to 200 of these drums contained unidentified liquid waste. The condition of these alleged drums is unknown, as is their location within the landfill. In September 1983, waste disposal at the landfill ceased with the opening of the Bristol Hill Landfill approximately two miles southeast of the site. In the fall of 1985, closure operations for the Volney Landfill were completed by the current owner, Oswego County. Because the landfill is unlined and has a leachate collection system only in the central and northern portion, leachate migration is occurring in both horizontal and vertical directions. The primary contaminants of concern affecting the ground water include: vinyl chloride, benzene, arsenic, VOCs, and metals.

The selected remedial action for this site includes: supplemental capping of the landfill side slopes; installation of a leachate collection system including collection drain, a slurry wall around the northern and southwestern sections, collection wells, force mains, and a collection drain; and onsite or offsite leachate treatment. The estimated capital cost for this remedial action is either $12,754,000 or $12,876,000 pending selection of offsite or onsite leachate treatment, respectively, with present worth O&M of $691,000 or $882,000 for onsite or offsite leachate treatment, respectively.

PERFORMANCE STANDARDS OR GOALS: The remedy meets Safe Drinking Water Act MCLs which include: vinyl chloride 1.0 ug/l; benzene 5.0 ug/l; and arsenic 50.0 ug/l. It also meets Clean Water Act and Water Quality Criteria, which include: arsenic 0.0 ug/l; chloroform 0.0 ug/l; and nickel 15.4 ug/l. The State criteria for phenols is 1.0 ug/l.

INSTITUTIONAL CONTROLS: Not applicable.

KEYWORDS: ARARs; Arsenic; Benzene; Capping; Clean Water Act; Direct Contact; Ground Water; Ground Water Monitoring; Leachate Collection/Treatment; Metals; Municipally-Owned Site; O&M; Offsite Treatment; Onsite Treatment; RCRA; Safe Drinking Water Act; Slurry Wall; State Criteria; VOCs.

WALDICK AEROSPACE, NJ
First Remedial Action
September 29, 1987

ROD ABSTRACT

The Waldick Aerospace Devices (WAD) site is a 1.72-acre inactive industrial facility located in the Sea Girt Section of Wall Township, Monmouth County, New Jersey. The site consists of three buildings located on the northern, western, and southern border. WAD was originally purchased and developed in the mid 1950s by Mr. Warren de Montmorency. The designated owner of the site since 1979 is KDD Realty Corporation of which Mr. de Montmorency is president. In 1979, the site was leased to Waldick Aerospace Devices, Inc. This firm manufactured and electroplated quick-release pins for the aerospace industry for five to six years. For at least the first three years of operations, waste water containing heavy metals and organic solvents was discharged directly onto the ground on either side of the southern corner of the main building. Additionally, spent machine oil was allowed to drain out of perforated drums onto the ground at the rear (western side) of the main building. In 1982, acting on information received from a former Waldick employee, the New Jersey Department of Environmental Protection (NJDEP) conducted an inspection of the Waldick facility. Numerous violations were recorded and, in 1982, NJDEP ordered Waldick to undertake cleanup activity. Some measures were taken, however, subsequent sampling indicated continued contamination of soil and ground water by metals and volatile organics. In 1986, a removal action was undertaken by EPA to repack and remove several chemical containers containing granite and a wide range of chemicals. The western soil area is contaminated with VOCs and petroleum hydrocarbons (PHCs). The primary contaminants of concern to the southern and eastern areas include: cadmium, chromium, VOCs, and PHCs.

The selected remedial action for this site includes: in-situ air stripping of contaminated soil under and around the main building (8,000 yd^3); excavation and offsite disposal of treated soils (2,500 yd^3) with residual contamination above action levels; demolition or decontamination of the onsite building, depending on the volume of soil beneath the main building requiring excavation and offsite disposal; and installation of ground water monitoring wells, site fencing and well restrictions. The estimated capital cost for this remedial action is $2,602,118 with annual O&M of $55,000.

PERFORMANCE STANDARDS OR GOALS: The standards applied to the soil on the site are cleanup objectives developed by the NJDEP. They include: total VOCs 1.0 mg/kg; total PHCs 100.0 mg/kg; cadmium 3.0 mg/kg; chromium 100.0 mg/kg; zinc 350.0 mg/kg; and nickel 100.0 mg/kg.

INSTITUTIONAL CONTROLS: Remediation will include the establishment of well usage and site access restrictions.

KEYWORDS: Air Stripping; ARARs; Chromium; Debris; Direct Contact; Excavation; Ground Water; Ground Water Monitoring; Institutional Controls; Metals; Offsite Disposal; O&M; Onsite Treatment; PCE; Soil; State Criteria; TCE; Treatment Technology; VOCs.

WILLIAMS PROPERTY, NJ
First Remedial Action - Final
September 29, 1987

ROD ABSTRACT

The Williams Property site, a 5.6-acre tract of land containing a single residence, is located in Middle Township, Cape May County, New Jersey. The site is wooded and surrounded by land zoned for agricultural and residential use. In 1979, approximately 150 drums of liquid chemical wastes and sludge were emptied on the Williams Property. The New Jersey Department of Environmental Protection (NJDEP) investigated to determine the nature and extent of the contamination and the impact of the spill on the environment, particularly the ground water. The results indicated extensive contamination of surficial sludge, contamination of soil and ground water with metals and a wide variety of organic chemicals. In June 1980, NJDEP removed approximately 1,200 yd^3 of sludge and soil. Continued evidence of ground water contamination forced the closing of the Williams's well in 1984. It was subsequently discovered that widespread dumping of refuse and construction debris had occurred on the site for years. The primary contaminants of concern affecting the ground water and soil include: bis(2-ethylhexyl)phthalate, PCE, methylene chloride, and xylene.

The selected remedial action for this site includes: extraction and treatment of contaminated ground water with discharge to the underlying aquifer; excavation (700 yd^3) and offsite incineration of contaminated soil; regrading, backfilling with clean soil and revegetation; and provision of an alternate water supply to nearby residents with contaminated wells. The estimated capital cost for this remedial action is $513,750 with annual O&M of $64,600.

PERFORMANCE STANDARDS OR GOALS: Approximately 700 yd^3 of soil will be excavated to achieve a target level of 1.0 mg/kg total VOCs. This action is consistent with the New Jersey Environmental Cleanup Responsibility Act (ECRA). Ground water treatment will achieve MCLs which include: TCE 5.0 ug/l; chloroform 100.0 ug/l; barium 1,000.0 ug/l; arsenic 50.0 ug/l; cadmium 10.0 ug/l; chromium 50.0 ug/l; and lead 50.0 ug/l.

INSTITUTIONAL CONTROLS: Specific institutional controls will be identified during the remedial design phase.

KEYWORDS: Air Stripping; Alternate Water Supply; ARARs; Clean Closure; Debris; Direct Contact; Drinking Water Contaminants; Excavation; Ground Water; Ground Water Treatment; MCLs; O&M; Offsite Disposal; Offsite Incineration; Offsite Treatment; Onsite Discharge; Onsite Treatment; Organics; PCE; RCRA; Safe Drinking Water Act; Soil; State Criteria; Treatment Technology; VOCs.

KANE & LOMBARD, MD
First Remedial Action
September 30, 1987

ROD ABSTRACT

The Kane & Lombard site is an 8.4-acre parcel of undeveloped land in Baltimore, Maryland. Dumping and burning of construction debris, domestic trash, and drums occurred at the site from 1962 until 1967, when the city passed an ordinance prohibiting the open burning of refuse. Illegal dumping continued from 1967 until approximately 1984, during which time many citations were issued for illegal burning on the property. In 1980, Maryland State inspectors observed between 400 and 500 drums, the majority of which were rusted, damaged, and contained holes. Following an onsite property assessment, EPA authorized the immediate removal of 1,163 drums in 1984. Of those, 822 drums were classified as empty and 341 drums contained contaminants which included: benzene, toluene, xylene, PAHs, PCBs, and heavy metals. Approximately six inches of soil below the drums were removed and disposed offsite. The site was stabilized by regrading, capping, and revegetation. Currently, soil and ground water are contaminated with these prior drum contaminants.

The selected remedial action for this site includes: removal of drums and contaminated soil (approximately 67,000 yd^3); site cleaning and removal of vegetation to facilitate the construction of subsurface containment/diversion structures; multi-layer soil capping; construction of drainage system; clearing of drainage ditch along the east side of the site; development of necessary surface water run-off management facilities; and ground water monitoring. The estimated capital cost for this remedial action is $4,692,660 with annual O&M of $28,930.

PERFORMANCE STANDARDS OR GOALS: This interim remedy does not attempt to ensure compliance with all ARARs for the entire site, but will be consistent with action-specific ARARs. Chemical-specific cleanup levels will be addressed in the second operable unit.

INSTITUTIONAL CONTROLS: Not applicable.

KEYWORDS: Alternate Closure; ARARs (Action-Specific: Capping, Excavation, Onsite Containment, Ground Water Discharge.); Benzene; Capping; Debris; Direct Contact; Excavation; Ground Water; Ground Water Monitoring; Interim Remedy; Metals; O&M; Onsite Containment; PAHs; PCBs; RCRA Closure Requirements; Slurry Wall; Soil; Surface Water Diversion/Collection; Toluene; VOCs.

PALMERTON ZINC, PA
First Remedial Action
September 4, 1987

ROD ABSTRACT

The Palmerton Zinc site is located in Carbon County, Pennsylvania. The New Jersey Zinc Company currently operates two zinc smelters in Palmerton at the base of Blue Mountain. These two smelters are referred to as the east and west plants. Since 1898, the New Jersey Zinc facility has produced zinc and other metals for machinery, pharmaceuticals, pigments, and many other products. Primary smelting of concentrated zinc sulfide ores, which was terminated in December 1980, is the main source of pollution. Prior to December 1980, the smelters emitted huge quantities of zinc, lead, cadmium, and sulfer dioxide which led to the defoliation of approximately 2,000 acres on Blue Mountain, adjacent to the east smelter. Vegetation damage first appeared on a 1951 aerial photograph as isolated patches on the steep, north-facing slope of Blue Mountain located immediately south of the east plant. By 1985, vegetation damage progressed over a contiguous widespread area leaving barren, eroded land visible. The primary contaminants of concern leading to the defoliation of Blue Mountain include: zinc, lead, cadmium, and sulfur dioxide.

The selected interim remedial measure focuses on the establishment of a natural eastern forest ecosystem and includes: onsite installation of a concrete pad with berms to mix sewage sludge and fly ash; construction of access roads; application of lime (10 tons per acre) and potash (80 pounds actual potassium per acre) on areas targeted for revegetation; application of fly ash and sewage sludge on target areas; application of grass seed or seedlings onto target areas; and application of mulch to protect the seed. Field testing of this remedy on a portion of the mountain has been implemented and is successful. The municipalities that may apply the sewage sludge and other amendments should do so at no cost to EPA, provided the cost of implementing the alternative is less than the costs to the municipalities to dispose of the sludge. A minimal capital cost may be incurred pending the outcome of municipality implementation issues. O&M will not be required.

PERFORMANCE STANDARDS OR GOALS: Guidelines regarding the land application of offsite sewage sludge were developed by the State of Pennsylvania. The maximum loading rates for metals, expressed in pounds per acre, include: cadmium 3.0; copper 100.0; chromium 100.0; lead 100.0; mercury 0.3; nickel 20.0; and zinc 200.0. The maximum dry sludge application rate is 60 tons per acre, with 20-25 tons per acre being the anticipated rate for this remedial action.

INSTITUTIONAL CONTROLS: Not applicable.

KEYWORDS: ARARs; Inorganics; Land Treatment; Lead; Metals; Onsite Treatment; Soil; State Criteria; Interim Remedy; Treatability Studies.

PRESQUE ISLE, PA
First Remedial Action - Final
September 30, 1987

ROD ABSTRACT

The Presque Isle site is located on the Presque Isle State Park Peninsula within the city of Erie, Erie County, Pennsylvania. The site consists of a plugged, abandoned natural gas well encompassing an area of approximately 100 ft^2. In the early 1970s, the Erie County Health Department (ECHD) noted a seep discharging a noxious, hydrogen sulfide-bearing black liquid. Investigations focused around whether the liquid was a natural brine emanating from the underlying Bass Island geologic formation, or was related to the deep well injection of spent paper pulping liquid by a nearby paper mill. The Presque Isle well was plugged in 1982, and subsequent investigations have revealed no further release of the hazardous liquid to the environment. No direct relationship between paper mill injection activities and the original release has been established.

EPA determined that no significant risk or threat to public health and the environment exists and therefore no further action will be taken at this site. There are no implementation issues or costs associated with this no action remedy.

PERFORMANCE STANDARDS OR GOALS: Chemical-specific goals met by this no action remedy were not specified.

INSTITUTIONAL CONTROLS: Not applicable.

KEYWORDS: No Action Remedy.

SALTVILLE WASTE DISPOSAL PONDS, VA
First Remedial Action
June 30, 1987

ROD ABSTRACT

The Saltville Waste Disposal site is located along the North Fork of the Holston River (NFHR) between Saltville and Allison Gap in Western Smyth County, Virginia, and partly extends into Washington County, Virginia. The Jefferson National Forest is located approximately one-half mile north of the site. From 1895 to 1972, Olin Corporation and its predecessors (Mathieson Chemical Corporation and Mathieson Alkali Works) used the site for various chemical manufacturing operations. The site includes a former plant area and two waste ponds, 5 and 6. Between 1951 and 1972, the Olin Corporation operated an electrolytic chlorine and caustic soda plant, which released mercury into the process wastes and onto the plant grounds. Mercury losses were estimated by Olin Corporation to be 100 lbs/day from the chlor-alkali processes. In 1963, Waste Pond 6 was constructed to receive waste overflow from Waste Pond 5. According to Olin corporation, no wastes containing mercury were dumped into Waste Pond 6, but structural components of the old plant reportedly were buried at the eastern edge of the pond. Since 1970, annual fish and sediment sampling at NFHR has shown mercury concentrations in the sediments near the site and in fish tissue at concentrations exceeding allowable limits. In 1983, the former plant area was capped with clay and topsoil, seeded with grass, and bordered with boulder and broken stone rip-rap along the river edge. Mercury, the primary contaminant of concern, has been detected at significant levels in the soil, surface water, sediments, air, and river biota.

The selected interim remedial measure includes: upgrading runon controls with ditches, berms, and/or downchutes; treatment of Waste Pond 5 outfall using either sulfide precipitation techniques or carbon adsorption; installation of ground water monitoring systems; performance of additional studies; and O&M with a treatment facility and continued up- and down-gradient NFHR sampling and analyses. Further studies to investigate the source will be initiated in the future. The estimated capital cost is either $840,052 or $2,143,052 with annual O&M of either $221,941 or $258,941, pending selection of carbon adsorption or sulfide precipitation treatment, respectively. Capital and O&M cost estimates for the ground water monitoring system have not yet been developed.

PERFORMANCE STANDARDS OR GOALS: The discharge of treatment process effluent to the NFHR must not cause total mercury concentrations in the river to exceed 0.05 ug/l, as set by the State Water Control Law authorized under the Clean Water Act.

INSTITUTIONAL CONTROLS: Not applicable.

KEYWORDS: Air; ARARs; Clean Water Act; Ground Water; Ground Water Monitoring; Metals; O&M; Offsite Disposal; Onsite Containment; Onsite Treatment; Public Exposure; RCRA; Sediments; Soil; State Criteria; Surface Water; Surface Water Diversion/Collection; Interim Remedy; Treatability Studies; Treatment Technology.

WEST VIRGINIA ORDNANCE WORKS, WV
First Remedial Action
March 27, 1987

ROD ABSTRACT

The West Virginia Ordnance Works (WVOW) site covers approximately 8,323 acres in Mason County, West Virginia. In 1942, WVOW was established as a government-owned, contractor-operated plant for the manufacture of trinitrotoluene (TNT) explosives. Approximately one-third of the area is currently occupied by the McClintic Wildlife Station, which is operated by the West Virginia Department of Natural Resources (DNR). Smaller portions of the nonindustrial areas of the site were declared excess and sold. They are now owned by Mason County or by private owners. TNT was produced from 1942 to 1945 by a batch process involving the nitration of toluene by the addition of nitric acid and sulfuric acid. Production during World War II resulted in soil contamination of the industrial area, process facilities, and industrial waste water disposal facilities by TNT, associated by-products and environmental transformation products. At the close of operations in 1945, WVOW was decontaminated by the Department of Defense and placed on standby status. Later that year, the plant was declared surplus and the facilities salvaged or disposed. The contamination includes: soil, industrial sewer lines underlying shallow aquifer of the TNT manufacturing area, trunk sewer lines leading from Pond 13 to outfalls, surface water and sediments of Pond 13, surface soils in the East and West Burning Grounds, and soil and sediments which eroded from the contaminated sources. The primary contaminants of concern include: nitroaromatic residues (2,4,6-TNT, 1,3,5-TNB, 2,4-DNT) and asbestos.

The selected remedial action for this site includes: in-situ flaming of the reactive TNT residue on the surface of the Burning Grounds Area followed by the installation of a two foot soil cover (1.5 feet of clay and five feet of soil) over areas with greater than 50 mg/kg total nitroaromatics contamination; installation of a two foot soil cover over areas in the TNT Manufacturing Area with greater than 50 mg/kg total nitroaromatics contamination; disposal of asbestos from the Burning Grounds Area at an offsite facility to be identified during design; and excavation, flushing, and backfilling of the reactive sewerlines in the trenches from which they were removed. All contaminated soils exceeding 50 mg/kg total nitroaromatics at the surface will be covered to achieve the 10^{-6} risk level. The sewerline will be rendered unreactive by flushing and buried deeper than two feet below ground surface; and an assessment of the wetlands will be performed prior to construction activities. The estimated capital cost for this remedial action is $1,807,000 with no O&M provided.

WEST VIRGINIA ORDNANCE WORKS, WV
First Remedial Action
(Continued)

PERFORMANCE STANDARDS OR GOALS: Soil remediation values will attain less than the 10^{-6} individual lifetime cancer risk level. In-situ flaming of TNT residue and soil covering will occur over areas with greater than 50.0 mg/kg total nitroaromatics contamination. No performance standard was provided for asbestos.

INSTITUTIONAL CONTROLS: Deed restrictions will prevent private use of McClintic Wildlife Station. The State of West Virginia has authority to maintain the land as a wildlife preserve.

KEYWORDS: ARARs; Asbestos; Deed Restrictions; Direct Contact; Excavation; Ground Water; Institutional Controls; O&M; Offsite Disposal; Onsite Treatment; Organics; Sediments; Soil; Soil Cover; Surface Water; Treatment Technology; Wetlands.

GEIGER (C&M OIL), SC
First Remedial Action
June 1, 1987

ROD ABSTRACT

The Geiger (C&M Oil) site, comprising a five-acre area, is located in central Charleston County, South Carolina, approximately ten miles west of the city of Charleston and within one mile of tidal wetlands. Approximately 40 people live within the immediate site area. In March 1969, Adams Run Services, Incorporated was permitted to incinerate waste oil at the site. Eight unlined lagoons were constructed to hold the waste oil in late 1971. In response to complaints from area residents, the South Carolina Pollution Control Authority (SCPCA) ordered all incineration and waste deposition activities at the site stopped, and the owner to take action to prevent spillage, leakage, or seepage of oil from the site. In April 1974, the Charleston County Health Department (CCHD) ordered the site closed, citing evidence of recent oil dumping and overflowing. In March 1982, the site was purchased by George Geiger, who is the present owner. In 1983, Mr. Geiger filled the lagoons with local soils since his requests to excavate and dispose of contaminated soil were denied. The site has since been used for the storage of equipment by his company, Pile Drivers, Incorporated. The primary contaminants of concern include: arsenic, toluene, organics, PCBs, and metals (lead, mercury, chromium).

The selected remedial action for this site includes: extraction and onsite treatment of contaminated ground water with discharge to an offsite stream; excavation and onsite thermal treatment of soil to remove organic contaminants; solidification/stabilization of thermally-treated soil, if necessary, to reduce mobility of metals; and backfilling of excavated areas with treated soil, followed by grading and covering with gravel. The estimated capital cost for this remedial action is $6,927,000 to $7,694,000, depending on the type of ground water treatment selected, with ground water monitoring present worth O&M of $367,200.

PERFORMANCE STANDARDS OR GOALS: Ground water remediation will attain the 10^{-5} risk level, which includes reaching the MCL values of benzene 5.0 ug/l, toluene 175.0 ug/l, and lead 50.0 ug/l. Preliminary soil cleanup goals include: lead 166.5 mg/kg; PCB 105.0 ug/kg; chromium 3.7 mg/kg; benzo(a)anthracene 140.0 ug/kg; benzo(a)pyrene 1,070.0 ug/kg; benzo(b and/or k)fluoranthene 170.0 ug/kg; benzene 14.4 ug/kg; trans-1,2-dichloroethylene 76 ug/kg; toluene 971.0 ug/kg; 1,1-dichlorobenzene 497.0 ug/kg; and 1,1-dichloroethane 2.78 ug/kg.

INSTITUTIONAL CONTROLS: Not applicable.

KEYWORDS: ARARs; Arsenic; Carcinogenic Compounds; Chromium; Direct Contact; Drinking Water Contaminants; Excavation; Ground Water; Ground Water Monitoring; Ground Water Treatment; Incineration; Metals; Oils; Offsite Discharge; Onsite Disposal; Onsite Treatment; Organics; PAHs; PCBs; RCRA; Soil; Solidification; Stabilization; Toluene; Treatment Technology; VOCs; Wetlands.

GOLD COAST, FL
First Remedial Action - Final
September 11, 1987

ROD ABSTRACT

The Gold Coast Oil Corporation (GCO) site is located in Miami, Florida. The 2-acre site is within a commercial/industrial/residential area and located over the Biscayne Aquifer, the sole source aquifer for the area. Ground water is used for drinking water, irrigation, and industrial purposes. The site property is owned by Seaboard System Railroad Company, currently known as CSX Transporation, who leased the property to GCO in the early 1970s. GCO, along with Solvent Extraction, Inc., were in the business of distilling mineral spirits, lacquer thinner, and reclaiming solvents. Blowdown from these operations was sprayed directly onto the ground and 53 drums of sludge-contaminated soil were stored onsite. Still-bottom waste from the distilling operation was pumped into a tank truck for storage. Additionally 2,500 corroded and leaking drums containing sludge from the distilling operation, contaminated soils, paint sludges, and large storage tanks of hazardous waste were located onsite. All wastes generated by the solvent recovery operations were disposed or stored onsite. No waste was shipped offsite during the 11 years of operation. Investigations of illegally dumped and stored sludge and onsite wells took place in 1980 and in 1981, by the Dade County Department of Environmental Resources Management (DERM) and EPA's Surveillance and Analysis Division (SAD), respectively. In 1982, CSX Transportation evicted GCO from the property and agreed to voluntarily clean up the site. The cleanup involved removing the drums, emptying storage tanks and excavating and removing contaminated soil to a depth of approximately six inches. Soil and ground water are contaminated with TCE, PCE, VOCs, lead, and metals.

The selected remedial action for this site includes: excavation of approximately 500 yd^3 of contaminated soil and hardened waste sludges with offsite disposal at a RCRA-approved facility; stabilization/solidification and onsite placement with capping over approximately 1,000 yd^3 of the remaining metal-contaminated soil; recovery of contaminated ground water by means of a recovery well field; ground water treatment with discharge to the aquifer, the POTW, or surface water (both treatment and disposal options will be evaluated during design); removal and disposal of storage tanks, concrete block office, supply shed, two abandoned automobiles, an aircraft engine, the concrete slabs, and storage saddles; and testing and decommissioning of the onsite supply well. The estimated total cost for this remedial action is $3,711,600 with present worth O&M of $74,850.

GOLD COAST, FL
First Remedial Action - Final
(Continued)

PERFORMANCE STANDARDS OR GOALS: Site-specific cleanup goals for ground water are consistent with the Recommended Maximum Contaminant levels (RMCLS) designated by the Safe Drinking Water Act and the Cancer Assessment Group estimate of a 10^{-4} health-based risk level. They include: 1,1-dichloroethane 5.0 ug/l; trans-1,2-dichloroethylene 70.0 ug/l; methylene chloride 5.0 ug/l; and tetrachloroethylene 0.7 ug/l. Soil cleanup, based on the 10^{-4} level, has set the indicator metal contaminant at 100.0 mg/kg.

INSTITUTIONAL CONTROLS: Not applicable.

KEYWORDS: ARARs; Capping; Carcinogenic Compounds; Clean Air Act; Clean Water Act; Direct Contact; Drinking Water Contaminants; Excavation; Ground Water; Ground Water Monitoring; Ground Water Treatment; MCLs; Metals; Offsite Disposal; O&M; Onsite Discharge; Onsite Disposal; PCE; Publicly-Owned Treatment Works; RCRA; Safe Drinking Water Act; Sole Source Aquifer; Solidification; Soil; Stabilization; TCE; Toluene; Treatability Studies; Treatment Technology; VOCs.

INDEPENDENT NAIL, SC
First Remedial Action
September 28, 1987

ROD ABSTRACT

The Independent Nail Company site, occupying 24.6 acres, is located near Beaufort, South Carolina. Land in the vicinity of the site is a combination of fields, woodlands and wetlands. Endangered and threatened species may occur within the area of influence of the site, although habitation has not been confirmed. The previous owners of the site, the Blake and Johnson Company, manufactured metallic screws and fasteners. As part of the manufacturing process, the company discharged approximately 33,000 gallons per day of plating waste water into an unlined infiltration lagoon. The lagoon was in use from approximately 1969 to 1980. The South Carolina Department of Health and Environmental Control (SCDHEC) reported that the waste water contained some organic cleaning solvents, phosphate, cyanide, chromium, cadmium, lead, mercury, nickel, zinc, copper, and iron. In April 1980, the Blake and Johnson Company ceased operation. Two months later the Independent Nail Company purchased the plant. They currently operate a paneling nail coating process at the plant, but do not discharge any waste water to the lagoon. The primary contaminants of concern to the soil and sediment include: cadmium, chromium, nickel, and zinc.

The selected remedial action for this site includes: excavation of contaminated soils and lagoon sediments; solidification/stabilization of excavated soils and sediments (6,200 yd^3); and placement of treated soils and sediments back into the excavated lagoon with 6 inches of top soil covering and seeding. Ground water remediation will be addressed in a future operable unit. The estimated capital cost for this remedial action is $1,032,000 with annual O&M of $22,500 for years 1-2 and $5,600 for years 3-30.

PERFORMANCE STANDARDS OR GOALS: Soil cleanup goals to reduce the risk from inhalation to below the 10^{-6} health-based cancer risk level include: cadmium 2.6 mg/kg; chromium 5.3 mg/kg; cyanide 0.02 mg/kg; nickel 18.0 mg/kg; and zinc 1,785.0 mg/kg. MCL cleanup goals will be addressed in a future operable unit.

INSTITUTIONAL CONTROLS: Not applicable.

KEYWORDS: ARARs; Chromium; Clean Air Act; Excavation; Ground Water; Ground Water Monitoring; Inorganics; Metals; O&M; Onsite Disposal; Onsite Treatment; Public Exposure; Sediments; Soil; Solidification; Stabilization; Treatment Technology; Wetlands.

NEWPORT DUMP SITE, KY
First Remedial Action
March 27, 1987

ROD ABSTRACT

The Newport Dump site is located on the Licking River, a tributary of the Ohio River, in the City of Wilder, Kentucky. The site was originally purchased by the City of Newport in the late 1940's and was used by the City for the disposal of residential and commercial wastes from its opening until its closure in 1979. Trenching and area filling were the most common methods used to dispose of waste at the site. In 1968, the Commonwealth of Kentucky instituted permitting requirements for landfills. The City of Newport received a permit in late 1969 to operate the site as a municipal sanitary landfill. The site was closed in 1979 and ownership was transferred to the Northern Kentucky Port Authority (NKPA) the same year. During the life of the landfill, the City was cited on numerous occasions for operational violations and for handling hazardous waste without a permit. The contaminated media include ground water and soil. The primary contaminants of concern include: metals, PAHs, solvents, and PCBs.

The selected remedial action includes: implementation of a multi-media monitoring program; restoration and extension of the leachate collection system and restoration, regrading, and revegetation of the existing clay cap. Further actions will depend on the monitoring results. The estimated capital cost for this remedy is $516,000 with estimated annual O&M for years 1-3 of $63,000 and $35,000 for years 4-30.

PERFORMANCE STANDARDS OR GOALS: Concentrations of chromium, nickel, benzo(a)pyrene, toluene and PCBs will be reduced to attain the 10^{-6} cancer risk level. Barium and chromium concentrations will be reduced to MCL values of 1,000.0 ug/l and 50.0 ug/l, respectively.

INSTITUTIONAL CONTROLS: Local authorities must promulgate permanent land use restrictions, i.e., prohibiting drilling any type of ground water well or installing subsurface equipment. When monitoring reveals innocuous levels of contamination after three days, agreements will be established to maintain limits and standards to the type of land renovation suitable for the site.

KEYWORDS: ARARs; Arsenic; Chromium; Flood Plain; Ground Water; Ground Water Monitoring; Inorganics; Institutional Controls; Leachate Collection/Treatment; MCLs; Metals; Municipally-Owned Site; O&M; Organics; PAHs; PCBs; RCRA; Sediments; Soil; Toluene.

NORTHWEST 58TH STREET LANDFILL, FL
Third Remedial Action - Final
September 21, 1987

ROD ABSTRACT

The Northwest 58th Street Landfill, one of three National Priorities List (NPL) sites that comprise the Biscayne Aquifer Superfund Study, is a one-square-mile site in northwest Dade County, Florida. It is bordered by a rock pit operation and a resource recovery plant. The site is located in an area where the ground water table is two to three feet below the ground surface. A municipal landfill operated at the site from 1952 to 1982. Approximately 60,000 tons of waste were disposed in 1952; volume increased annually over the thirty years of operation to over 1,000,000 tons per year in the 1980s. Small quantities of hazardous materials from households (e.g., pesticides, paints, solvents, etc.) were considered to be municipal waste and disposed at the landfill. In 1975, the landfill began placing daily cover on the site. However, prior to this, wastes were not compacted and daily cover was not applied. As a result of earlier practices, the landfill is believed to be saturated with water and the volume of rainfall infiltrating the landfill equals the volume of leachate released. Since October 1982, the landfill has only received debris, quarry wastes, and water paint sludges. The primary route for human exposure to the contamination is through the drinking water and, in particular, two sets of public drinking water wells located 2.5 miles downgradient of the landfill. These wells serve an estimated 750,000 people. A 1986 Endangerment Assessment analysis identified eight contaminants of concern: arsenic, chromium, zinc, benzene, chlorobenzene, 1,1,2,2-tetrachloroethane, trichloroethene, and vinyl chloride.

The selected remedial action for this site includes: controlling leachate generation by a combination of grading, drainage control, and capping; providing a public water supply to replace approximately 60 wells; and landfill closure. The estimated capital cost for this remedial action is $5,500,000 with present worth O&M of $1,500,000.

PERFORMANCE STANDARDS OR GOALS: Air stripping as required in the 1985 ROD will bring the chemicals of concern into compliance with MCLs.

INSTITUTIONAL CONTROLS: Not applicable.

KEYWORDS: Alternate Water Supply; ARARs; Arsenic; Benzene; Capping; Chromium; Debris; Direct Contact; Drinking Water Contaminants; Ground Water; Landfill Closure; MCLs; Metals; O&M; PCE; Public Exposure; Safe Drinking Water Act; Sole-Source Aquifer; State Criteria; TCE; VOCs.

PALMETTO WOOD PRESERVING, SC
First Remedial Action - Final
September 30, 1987

ROD ABSTRACT

The Palmetto Wood Preserving (PWP) Site is located in the rural community of Dixiana, South Carolina. The 5-acre site is a decommissioned wood preserving facility, which operated between 1963 and 1985. PWP began operating in 1963 using a fluoride-chromate-arsenate-phenol (FCAP) and an acid-copper-chromate (ACC) process. In 1980, Eastern Forest Products took over and switched to a chromate-copper-arsenate (CCA) process. Operations consisted of impregnating wood with a CCA solution under high pressure, and allowing the wood to drip-dry under normal conditions. Beginning in December 1981, the South Carolina Department of Health and Environmental Control (SCDHEC) received complaints of green liquids running off the PWP site during heavy rainfall. Subsequent soil sampling conducted by SCDHEC indicated the presence of high concentrations of chromium. Pentachlorophenol (PCP) and dinitrophenol residues were also detected. Well water sampling showed no evidence of contamination. In April 1983, a private well was found to contain high levels of chromium and copper. As a result of the findings, SCDHEC issued a Consent Order requesting PWP to determine the extent of soil and ground water contamination. The primary contaminants of concern are chromium and arsenic.

The selected remedial action for the site includes: extraction, filtration, and onsite treatment of contaminated ground water with discharge to a nearby stream; installation of a municipal water line or new well for a private residence; and excavation, onsite flushing, and onsite replacement of decontaminated soil, with onsite treatment of flushing solution. The estimated capital cost of the remedy is $1,393,000 with annual O&M of $176,163.

PERFORMANCE STANDARDS OR GOALS: Ground water will attain MCL values for chromium 50.0 ug/l; arsenic 50.0 ug/l; and copper 1,000.0 ug/l. Soil remediation will attain the public health evaluation levels for chromium 627.0 mg/kg and arsenic 200.0 mg/kg.

INSTITUTIONAL CONTROLS: Not applicable.

KEYWORDS: Alternate Water Supply; ARARs; Arsenic; Chromium; Excavation; Ground Water; Ground Water Treatment; MCLs; Metals; O&M; Offsite Discharge; Offsite Disposal; Onsite Disposal; Onsite Treatment; RCRA; Safe Drinking Water Act; Soil; Soil Washing/Flushing; Treatment Technology.

PARRAMORE SURPLUS, FL
First Remedial Action - Final
September 15, 1987

ROD ABSTRACT

The Parramore Surplus Company (PSC) site, occupying approximately 25 acres, is located in Mt. Pleasant, Gadsden County, Florida. PSC is an active facility, which stores and resells surplus government products purchased from naval airbases in Florida and Alabama in 1972. Most of the site is used for vehicle and equipment storage. In March 1982, the Florida Department of Environmental Regulation (FDER) inspected the site and estimated that 400-600 drums were stored onsite with many leaking and killing vegetation. PSC conducted limited cleanup activities, which included the removal of hazardous chemicals and contaminated soil to a hazardous waste landfill in Emelle, Alabama. EPA denied an August 1983 request by PSC to delete the site from the NPL because no data existed to show that the soil removal was effective in remedying surface contamination. In March 1985, EPA conducted a Modified Remedial Investigation which detected elevated levels of organic compounds in the soil. However, the analytical results were not considered indicative of true site conditions. EPA's Public Health Evaluation concluded that the onsite soil poses no risk to human health or the environment and that further soil remediation is not necessary. A ground water quality assessment, however, was recommended to assure that no ground water contamination has occurred for past releases of hazardous substances at the site.

The selected remedial action for this site includes the installation of ground water monitoring wells, followed by two periods of ground water sampling and analyses to assure that ground water has not been adversely impacted by past releases of hazardous substances. If contaminant levels do not exceed ARARs, no further action will be taken and the site will be proposed for NPL deletion. The estimated capital cost for this selected monitoring is $21,000 with annual O&M of $19,000.

PERFORMANCE STANDARDS OR GOALS: Cleanup standards to be reviewed as part of the ground water quality assessment include MCLs and Water Quality Criteria.

INSTITUTIONAL CONTROLS: Not applicable.

KEYWORDS: ARARs; Direct Contact; Ground Water; Ground Water Monitoring; MCLs; Metals; No Action Remedy; O&M; Organics; PCBs; Public Exposure; Safe Drinking Water Act; Sediments; Soil; State Criteria.

POWERSVILLE LANDFILL, GA
First Remedial Action - Final
September 30, 1987

ROD ABSTRACT

The Powersville Landfill, which occupies approximately 15 acres, is located in Peach County, Georgia. General crop farming is the major agricultural practice in the area, however, cattle farms and orchards are also common. Locally, the Providence aquifer system is a source of water for both consumption and irrigation. From the early 1940s to 1969, the landfill site was a borrow pit, which provided sand and fill material to the county for local use. During 1969, Peach County began operating the site as a sanitary landfill receiving municipal and industrial wastes. In December 1972, the Georgia Department of Natural Resources Environmental Protection Division suggested the separation and maintenance of areas for pesticides and associated wastes, which the landfill attained. Disposal records indicate that pesticide manufacturing wastes were disposed in the municipal section of the landfill prior to June 1973 and in the hazardous waste area between June 1973 and 1978. Neither the quantity nor the location of the waste in the municipal landfill is known. The landfill was closed in 1979 due to its location in a highly permeable sand and gravel aquifer. The primary contaminants of concern affecting the soil and ground water include: VOCs (vinyl chloride), organics, metals (lead and chromium), and pesticides.

The selected remedial action for this site includes: surface capping of hazardous waste and municipal fill areas using artificial material or clay, with grading, drainage, and closure; installation of eight additional monitoring wells, at a minimum, in the upper region of the aquifer to determine area leaching or migration; and extension of the municipal water supply pipe line as an alternate water supply. The State of Georgia indicates an inability to pay their portion of the costs, which is 50%, if the PRPs do not come forth to conduct the remedial action. The total present worth cost for this remedial action is $4,000,000 with present worth O&M of $577,013.

PERFORMANCE STANDARDS OR GOALS: The mandates of Safe Drinking Water Act apply to the Providence aquifer. However, none of the contaminants exceed the standards established under this act.

INSTITUTIONAL CONTROLS: Site deed restrictions will be implemented to prevent any drilling or construction activities that would compromise the integrity of the remedy. Deed restrictions will also be established to prohibit the drilling of water wells in the area between the site and Mule Creek, the area in which ground water is likely to be affected by the landfill.

KEYWORDS: Alternate Water Supply; ARARs; Capping; Carcinogenic Compounds; Chromium; Deed Restrictions; Direct Contact; Drinking Water Contaminants; Ground Water; Ground Water Monitoring; Institutional Controls; Lead; Metals; Municipally-Owned Site; O&M; Organics; Pesticides; Public Exposure; RCRA; Safe Drinking Water Act; Soil; State Criteria; VOCs.

SODYECO, NC
First Remedial Action - Final
September 24, 1987

ROD ABSTRACT

The Southern Dyestuff Company (Sodyeco) site, located in Mecklenburg County, North Carolina, consists of approximately 1,300 acres. Approximately 20-30 residents reside within a one-quarter mile radius of the site, while many of the area's 9,137 residents commute daily to the site for employment. The site contains an operating manufacturing facility consisting of production units, a waste water treatment area and material storage areas. Approximately 1,040 acres are undeveloped. Sodyeco began operations at the site in 1936. In 1958, American Marietta (which became Martin Marietta in 1961) purchased the site and expanded the company's liquid sulfur dye production to include the manufacture of vat and disperse dyes and specialty products for agrochemical, electronic, explosive, lithographic, pigment, plastic, rubber, and general chemical industries. The Sandoz Chemical Company purchased the plant in 1983. Five CERCLA facilities, identified as A, B, C, D, and E, were identified as probable sources of ground water and soil contamination. Area A operated as a landfill between the 1930s and 1973 or 1974. It accepted sulfur residues and dyes, fiber cloths, empty metal, cardboard drums and cartons, non-acidic and non-flammable chemicals, chemical wastes, and construction debris. This area is currently covered with asphalt and buildings. Area B operated as a landfill between 1973 and 1978 and received wastes previously disposed in Area A. Area C consisted of three covered trenches that contained laboratory and production samples, distillation tars, and waste solvents. They have since been excavated, regraded, and grassed. Area D contained two waste water settling ponds that have been taken out of service. Area D currently holds a lined fresh water pond and a fuel oil storage tank. Area E, downgradient of the old plant manufacturing area, has no known waste disposal receptacles. The primary contaminants of concern include: TCE, PAHs, and other volatile organics.

The selected remedial action for this site includes: extraction and onsite treatment at the waste water treatment facility of contaminated ground water with offsite discharge to a stream; onsite treatment of contaminated soil in Area C (treatability studies will be performed to determine which type of treatment will be used); excavation and offsite incineration of contaminated soil in Area D; and asphalt capping of Area B. The estimated present worth cost for this remedial action will range from $2,089,000 to $3,865,000.

PERFORMANCE STANDARDS OR GOALS: Ground water cleanup goals are based on MCLs and MCLGs, Federal Ambient Water Quality Criteria, National Ambient Air Quality Standards, and State environmental standards. Specific cleanup goals include: trichloroethylene 2.7 ug/l; tetrachloroethylene 0.8 ug/l; chlorobenzene 60.0 ug/l; ethylbenzene 680.0 ug/l; 1,2-dichlorobenzene 400.0 ug/l; toluene 2,000.0 ug/l; xylene 440.0 ug/l; anthracine 2.8 ug/l; fluorene 2.8 ng/l; and total PAHs 2.8 ng/l.

INSTITUTIONAL CONTROLS: Not applicable.

SODYECO, NC
First Remedial Action - Final
(Continued)

KEYWORDS: ARARs; Capping; Clean Water Act; Direct Contact; Excavation; Ground Water; Ground Water Treatment; Incineration; MCLs; MCLGs; O&M; Offsite Disposal; Offsite Discharge; Offsite Treatment; Onsite Treatment; Organics; PAHs; Public Exposure; RCRA; Safe Drinking Water Act; Soil; State Criteria; Surface Water; TCE; Treatability Studies; Treatment Technology; VOCs; Water Quality Criteria.

TOWER CHEMICAL, FL
First Remedial Action
July 9, 1987

ROD ABSTRACT

The Tower Chemical Company (TCC) site is an abandoned manufacturing facility located along the eastern edge of Lake County, Florida. The TCC owned and utilized two separate parcels of land: a main facility and a spray irrigation field with approximately 16 residences, located within a 1.2-mile radius of the site, which tap the underlying aquifer for their water supply. Wetlands and swamps are also nearby the site. From 1957 to 1981, the TCC manufactured, formulated, and stored various pesticides. Acidic waste waters produced during the manufacturing process were discharged into the unlined percolation/evaporation pond located at the main facility. In July 1980, the pond overflowed and discharge was diverted to the spray irrigation field. In June 1980, as a result of damages caused by the waste water pond overflow, the Florida Department of Environmental Regulation (FDER) ordered TCC to cease all discharges from the site. Studies initiated by EPA and FDER indicated high concentrations of DDT and associated pesticide compounds in the main facility and a below-normal fish population in the unnamed stream onsite. In April 1983, the Centers for Disease Control (CDC) recommended site stabilization and access restriction to the main facility/disposal areas. In July 1983, an IRM was initiated. It included: excavation of 2,275 ft^2 of soil, 1,545 yd^3 of sediment and 72 drums with offsite disposal; waste water pump and treatment of approximately 1,000,000 gallons with discharge to the unnamed stream; backfilling, capping; surface water runoff diversion system; and fencing. The primary contaminants of concern to the soil and ground water include: DDT, pesticides, and metals.

The selected remedial action for this site includes: removal and onsite treatment of approximately 100,000,000 gallons of contaminated ground water with temporary onsite storage followed by discharge to surface water; provision of individual treatment units for two private wells within the immediate site vicinity; excavation and incineration of approximately 4,000 yd^3 of contaminated surface soil from both the overflow area and portions of the burn/burial area of the site; analysis of the treated soil to determine the proper action for residual management; exploration of the burn/burial area to determine the source of a magnetic anomaly; if relic drums are identified, thermal destruction of contents after typing; decontamination of two storage tanks and nearby concrete pads; and point source run-off diversion. The estimated present worth cost for this remedial action is $6,788,000.

TOWER CHEMICAL, FL
First Remedial Action
(Continued)

PERFORMANCE STANDARDS OR GOALS: Ground water restoration will attain the Florida Administrative Code drinking water health advisory, 10^{-6} health-based risk levels, and ACLs. Specific cleanup goals for ground water include: arsenic 0.05 ug/l; nickel 350.0 ug/l; chromium 0.05 ug/l; alpha-BHC 0.05 ug/l; chloroform 5 ug/l; DDT 0.01 ug/l; chlorobenzilate 1.0 ug/l; and dicofol 1.0 ug/l. Target cleanup levels for soil contamination will attain the 10^{-6} health-based risk level, which includes copper 100.0 mg/kg, lead 100.0 mg/kg, arsenic 5.0 mg/kg, and DDT 35.0 mg/kg.

INSTITUTIONAL CONTROLS: Site access restrictions will be implemented for main facility disposal areas.

KEYWORDS: ACLs; ARARs; Arsenic; Chromium; Debris; Drinking Water Contaminants; Excavation; Ground Water; Ground Water Treatment; Inorganics; Incineration; Institutional Controls; Metals; Offsite Disposal; Offsite Treatment; Onsite Containment; Onsite Discharge; Onsite Treatment; Organics; Pesticides; RCRA; Safe Drinking Water Act; Soil; State Criteria; Surface Water; Surface Water Diversion/Collection; Treatment Technology; Wetlands.

TRI-CITY CONSERVATION, FL
First Remedial Action - Final
September 21,1987

ROD ABSTRACT

The Tri-City property, occupying approximately one-quarter acre, is located in Temple Terrace, Hillsborough County, Florida. The site is located within one-fourth mile of at least eight private drinking water wells and within two miles of major public drinking water supply wells. From 1960 to 1975, the Tri-City property was used for the operation of a heating oil service business. From 1978 to 1983, Tri-City Oil Conservationist Corporation was a waste oil collection and distribution center. During the operational period of the Tri-City site, the Hillsborough County Environmental Protection Commission and the Florida Department of Environmental Regulation (FDER) received several complaints regarding odor problems and sloppy practices. In 1982, a 3,000 gallon waste oil spill occurred at the Tri-City operation. The owner failed to clean up the site at the request of FDER and in February 1984, EPA conducted an immediate removal action. Following this removal, soil contamination posed a threat to the ground water. In April 1985, 850 yd^3 of contaminated soil and sludges were excavated from the site and transported offsite to an approved hazardous waste facility. The June 1986, analyses of soils, ground water, and sediments conducted by FDER indicated the source of contamination had been removed and contaminant concentration levels did not exceed State or Federal drinking water standards.

The selected remedial action for this site is no further action since current contaminant levels do not exceed State or Federal drinking water standards. This remedial selection has no cost or O&M activities.

PERFORMANCE STANDARDS OR GOALS: Current contaminant concentration levels are below analytical detection limits and are consistent with the Safe Drinking Water Act, Clean Water Act, RCRA, Clean Air Act, Toxic Substances Control Act, and the State of Florida Administrative Codes.

INSTITUTIONAL CONTROLS: Not applicable.

KEYWORDS: ARARs; Clean Air Act; Clean Water Act; No Action Remedy; RCRA; Safe Drinking Water Act; Toxic Substances Control Act; State Criteria.

FMC CORPORATION, MN
First Remedial Action - Final
September 30, 1987

ROD ABSTRACT

The FMC site is located in the City of Fridley, Minnesota. The site is approximately 1,000 feet east of the Mississippi River, just north of the City of Minneapolis, and upstream of the City of Minneapolis drinking water intake, which serves approximately 500,000 people. This ground water operable unit addresses those portions of the site known as the FMC lands (13 acres) and the Burlington Northern Railroad Company (BNR) lands (5 acres). From 1941 to 1964, Northern Ordnance, Inc. operated a naval ordnance manufacturing complex at the site. Between 1945 and 1969, a tract of land south of the complex was used for the burning and disposal of wastes, including plating wastes, paint, paint sludges, oils, bottom ash, and chlorinated and non-chlorinated solvents. In 1964, the FMC Corporation purchased the property and continued to use the waste disposal area. Disposal was discontinued by FMC in 1969. In November 1980, the Minnesota Pollution Control Agency (MPCA) staff received a hot line complaint alleging past waste disposal at the FMC and BNR lands. Further investigation revealed historical waste disposal practices and found contamination of ground water and the Mississippi River. By June 1983, approximately 38,600 yd^3 of contaminated soil with VOC concentrations greater than 1 mg/kg were excavated from the unsaturated zone in the area of the waste burn and disposal pits and placed in a RCRA onsite containment and treatment facility. Currently, ground water in the underlying alluvial aquifer, which discharges to the Mississippi River, is contaminated with TCE, PCE, benzene, toluene, xylene, and other VOCs. TCE has been estimated to account for 98 percent of the contaminant loading.

The selected remedial action for this site includes: ground water pump and treatment with discharge to a POTW (sewer system); ground water monitoring; and implementation of institutional controls with land use restrictions to mitigate against near-term usage of contaminated ground water between the site and the Mississippi River. The estimated capital cost for this remedial action is $773,935 with present worth O&M of $744,870.

PERFORMANCE STANDARDS OR GOALS: The MPCA-approved cleanup standard for TCE (270.0 ug/l) will be met at the site boundary. This corresponds to the 10^{-6} health-based risk level. The risk at the receptor will be at or below the 10^{-6} level. Specific MCL criteria to be met during treatment include: trichloroethylene 5.0 ug/l; tetrachloroethylene 10.0 ug/l; and benzene 5.0 ug/l. For those contaminants where no MCL has been established, cleanup levels have been developed using the Minnesota Department of Health's Recommended Drinking Water Limits. Specific criteria include: 1,1,2-trichloroethane 6.1 ug/l; toluene 2,000.0 ug/l; and xylene 440.0 ug/l. Effluent discharge standards for total VOCs will be met at the point of discharge to the existing sewer prior to mixing with facility wastewater. They are based on POTW standards under the Clean Water Act and include 5,000.0 ug/l (10,000.0 ug/l for the first two months) with a limit of 15,000.0 ug/l (20,000.0 ug/l for the first 2 months).

FMC CORPORATION, MN
Second Remedial Action - Final
(Continued)

INSTITUTIONAL CONTROLS: A City of Fridley ordinance prohibits installation of a potable water supply well within the FMC site area when municipal service is within reasonable proximity.

KEYWORDS: ARARs; Benzene; Carcinogenic Compounds; Clean Water Act; Direct Contact; Drinking Water Contaminants; Flood Plain; Ground Water; Ground Water Monitoring; Ground Water Treatment; Institutional Controls; MCLs; O&M; Offsite Discharge; PCE; Publicly-Owned Treatment Works; Safe Drinking Water Act; State Criteria; TCE; Toluene; VOCs; Water Quality Criteria.

INDUSTRIAL EXCESS LANDFILL, OH
First Remedial Action
September 30, 1987

ROD ABSTRACT

The Industrial Excess Landfill (IEL) is a 30-acre closed sanitary landfill located in Uniontown, Stark County, Ohio. Over 400 residential homes, located within a 0.5 mile radius of the landfill, rely on individual or private well supplies for drinking water. Prior to 1961, the landfill property may have been utilized as a coal mine and later for mining sand and gravel. Gradually, the mining/excavation pit was converted into a landfill which received a variety of wastes. Between 1964 and 1968, the site was used to store fly ash, masonry rubble, paper, and lumber scrap. From 1968 to 1980, IEL accepted municipal, commercial, industrial, and chemical wastes of substantially undetermined and unknown composition, primarily from the nearby rubber industry. Large quantities of chemical and liquid waste were dumped onto the ground either from 55-gallon drums or from tanker trucks. In January of 1972, the Stark County Board of Health (SCBH) ordered the dumping of chemical wastes stopped. In 1980, due to public concern and facility volume limitations, the landfill was ordered to close. Closure plans were completed and the site was covered and seeded. In 1983, complaints by community residents prompted investigations to ascertain whether drinking water was contaminated and if health risks existed. The results indicated that residential wells were contaminated with inorganics, organics, and VOCs.

The selected remedial action involves provision of an alternate water supply to approximately 100 homes located west of the site. EPA has deferred the decision on the source of this water until the completion of initial design activities. The estimated present worth cost for this remedial action ranges from $1,715,870 to $2,289,060, pending water source selection.

PERFORMANCE STANDARDS OR GOALS: The provision of an alternate water supply will protect public health until an overall remedy can take effect. Chemical-specific cleanup goals will be selected in the second operable unit.

INSTITUTIONAL CONTROLS: Not applicable.

KEYWORDS: Alternate Water Supply; ARARs; Direct Contact; Drinking Water Contaminants; Ground Water; Inorganics; Interim Remedy; Organics; Public Exposure; VOCs.

JOHNS-MANVILLE, IL
First Remedial Action - Final
June 30, 1987

ROD ABSTRACT

The Johns-Manville-Waukegan site is located along Lake Michigan in Lake County, Illinois. The disposal site covers approximately 120 acres of the approximately 300 acres of land owned by the Manville Service Corporation, formerly the Johns-Manville Sales Corporation. The Manville plant presently produces and has produced a wide range of building materials. Since 1922, waste materials containing primarily asbestos, and to a lesser extent, lead, chrome, thiram, and xylene have been deposited in a variety of pits at the site, many of which are no longer in use. Presently, no asbestos or lead is used in this manufacturing process except friable asbestos. Currently, active waste disposal pits include: the asbestos disposal pit, which receives friable asbestos wastes from manufacturing building reconstruction activities; the sludge disposal pit, which receives dredged materials from the onsite waste water treatment system; and the miscellaneous disposal pit in which miscellaneous, non-asbestos-containing wastes are and were deposited. Airborne asbestos monitoring was conducted in 1973 and 1982. The 1973 study did not provide conclusive evidence of asbestos air contamination. The 1982 study indicated elevated onsite and downwind asbestos fiber concentrations in the 2.5 to 15 micrometer range. The primary contaminants of concern affecting the air, ground water, soil, and Lake Michigan surface water include: asbestos, lead, chromium, particulate matter, and potentially, arsenic.

The selected remedial action for this site includes: grading and covering of waste materials and soil in inactive waste disposal areas; closure of the asbestos disposal pit (in June 1989); offsite disposal of asbestos-containing material generated from reconstruction activities (after June 1989); soil covering; clearance of debris; closure of the small ditch and open area miscellaneous disposal pits; construction of a dike and peripheral ditch; fencing at the eastern boundary with posting of warning signs; and ground water, surface water, and air monitoring. The estimated capital cost for this remedial action is $4,026,000 with annual O&M of $49,000.

PERFORMANCE STANDARDS OR GOALS: Remediation activities meet the National Emission Standards for Hazardous Air Pollutants (NESHAP) requirements for asbestos. Site monitoring activities will provide data to determine compliance with additional requirements.

INSTITUTIONAL CONTROLS: Not applicable.

KEYWORDS: Air; Air Monitoring; ARARs; Arsenic; Asbestos; Capping; Chromium; Clean Air Act; Direct Contact; Ground Water; Ground Water Monitoring; Inorganics; Lead; Metals; O&M; Offsite Disposal; Public Exposure; State Criteria; Surface Water; RCRA Alternate Landfill Closure; Water Quality Criteria.

LASKIN/POPLAR OIL, OH
Second Remedial Action
September 30, 1987

ROD ABSTRACT

The Laskin/Poplar Oil site, occupying approximately 9 acres, is located in Ashtabula County, Ohio. Approximately 80 years ago, a greenhouse operation began. Boilers were installed approximately 30 years ago to heat the greenhouses. During the 1960s, tanks were installed to hold waste oil to fire the boilers. The oils were not analyzed prior to acceptance and oil containing PCBs and other hazardous constituents were accepted. As the greenhouse business deteriorated, the owner began collecting, reselling, and disposing of waste oils containing PCBs and other hazardous constituents. Several emergency actions were taken after the site was discovered and during critical periods such as mud slides and flooding. Between July and October 1982, a planned removal action removed 302,000 gallons of waste oil, solidified 205,000 gallons of sludge, and treated and released 430,000 gallons of contaminated water. Currently, bulk waste material including 6,000 gallons of oil, 60,000 gallons of waste water, and 705,000 gallons of sludge are still present at the site. The primary contaminants of concern affecting the soil include: VOCs, PCBs, PAHs, and lead.

The selected remedial action for this site includes: construction of a fence around contaminated portions of the site and the onsite incinerator; onsite incineration of oils, sludges, and highly contaminated soils; offsite treatment of all waste water, decontamination water and scrubber water; offsite disposal of all incinerator ash; dismantling and offsite disposal of all tanks; crushing and incineration of cinder block walls of the pits; and backfilling and grading all excavated areas. The estimated present worth cost for this remedial action is $8,500,000.

PERFORMANCE STANDARDS OR GOALS: The final cleanup levels will be determined at the completion of the overall site RI/FS.

INSTITUTIONAL CONTROLS: Not applicable.

KEYWORDS: ARARs; Clean Air Act; Incineration; Lead; Metals; Offsite Disposal; Offsite Treatment; Oils; Onsite Treatment; Organics; PAHs; PCBs; RCRA; Sludges; Soil; State Criteria; Treatment Technology; VOCs.

LIQUID DISPOSAL, MI
First Remedial Action - Final
September 30, 1987

ROD ABSTRACT

Liquid Disposal, Inc. (LDI) is a 6.8-acre site located in a residential/light industrial area in Shelby Township, Michigan. LDI is bordered by the Clinton River and its flood plain, the Shadbush Tract Native Study Area, and automobile junkyards. The site was first used as a source of sand and gravel prior to becoming a landfill around 1964. Between 1968 and 1982, LDI operated as a commercial incinerator of liquid waste. During this time, the site contained a large volume of hazardous substances stored in the waste oil and scrubber lagoons, ash sludge piles, above and below ground storage tanks, and in 55-gallon drums. Since 1982, EPA has completed four immediate removal actions. As a result of these actions, no surface waste sources exist at the site. However, several hundred waste sample jars, old incinerator parts, emptied tanks, wooden pallets, miscellaneous containers, and other debris remain onsite. Currently onsite and offsite soil and ground water (the upper aquifer) are contaminated with a wide variety of organic and inorganic chemicals. Onsite concentrations are generally higher than offsite. The primary contaminants of concern affecting the ground water and soil include: VOCs, semi-volatile organics, PCBs, barium, cadmium, and lead.

The selected remedial action for this site includes: onsite land disposal of all existing debris and equipment; onsite solidification/ fixation of soil and waste; ground water pump and treatment using air stripping and ion exchange with discharge to Clinton River or POTW; and construction of a slurry wall and impermeable cap containment system. The estimated capital cost of this remedial action is $21,743,100 with present worth O&M of $316,600.

PERFORMANCE STANDARDS OR GOALS: Target cleanup levels (TCLs) for carcinogens in soil and ground water were based on the 10^{-6} health-based cancer risk level. For noncarcinogens in ground water, MCLs and health-based levels were used as TCLs. The TCLs for ground water include: barium 1,000.0 ug/l; cadmium 10.0 ug/l; chloroform 0.1 ug/l; benzene 0.2 ug/l; methylene chloride 1.0 ug/l; and TCE 0.8 ug/l. The TCLs for soil include: TCE 77.0 ug/g; tetrachloroethylene (PCE) 16.0 ug/g; benzo(a)pyrene 0.4 ug/g; PCBs 1.0 ug/g; and lead 20.0 ug/g.

INSTITUTIONAL CONTROLS: Not applicable.

KEYWORDS: Air Stripping; ARARs; Benzene; Cadmium; Capping; Carcinogenic Compounds; Clean Water Act; Debris; Direct Contact; Flood Plain; Ground Water; Ground Water Treatment; Inorganics; Lead; MCLs; Metals; O&M; Onsite Containment; Onsite Discharge; Onsite Disposal; Onsite Treatment; Organics; PCBs; PCE; Pesticides; Public Exposure; Publicly Owned Treatment Works; RCRA Closure Requirements; Sludge; Slurry Wall; Soil; Solidification; State Criteria; TCE; Treatment Technology; VOCs.

MARION/BRAGG LANDFILL, IN
First Remedial Action - Final
September 30, 1987

ROD ABSTRACT

The Marion/Bragg Landfill is a 72-acre site located near the southeastern city limits of Marion, Indiana. The site is bordered on the north and east by the Mississinewa River. The main features of the site include a 45-acre landfill and a 15-acre pond. From 1935 to 1961, the site was used as a sand and gravel quarry. From 1949 to 1970, portions of the site, leased by Radio Corporation of America and Bragg Construction Company, were used for industrial and municipal waste disposal, respectively. Throughout this period, the Indiana State Board of Health (ISBH) noted the disposal of acetone, plasticizers, lacquer thinner, and enamels. Drummed wastes were also accepted and contents were allegedly emptied from the drums and worked into the landfill waste with a bulldozer, causing several fires onsite. Drums also were allegedly rinsed and resold. In 1975, Bragg Construction Company ceased operation of the landfill. In 1975, Waste Reduction Systems constructed a transfer station to properly transfer solid wastes to an approved landfill. The transfer station was closed in 1977. The landfill contains approximately 1,100,000 yd^3 of waste. The primary contaminants of concern affecting the ground water include: DCE, TCE, vinyl chloride, bis(2-ethylhexyl)phthalates, and metals.

The selected remedial action for this site includes: capping with regrading; provision and maintenance of flood control measures to protect the portion of the site within the 100-year flood plain; fence construction; provision of three private wells for drinking water; sealing shallow wells; and ground water monitoring to determine effectiveness of the remedy. Additional studies will be conducted to determine remedies for ground water and the onsite pond. The estimated capital cost for this remedial action is $5,800,000 with present worth O&M of $1,000,000.

PERFORMANCE STANDARDS OR GOALS: This interim remedy meets State of Indiana and RCRA 264 regulations. Chemical-specific cleanup goals were not specified at this time. Continued testing is being performed to determine whether bioaccumulation of chemicals necessitates further ground water treatment.

INSTITUTIONAL CONTROLS: Site access and deed restrictions prohibiting ground water usage or installation of onsite shallow wells will be implemented.

KEYWORDS: Alternate Water Supply; ARARs; Capping; Deed Restrictions; Drinking Water Contaminants; Direct Contact; Flood Plain; Ground Water; Ground Water Monitoring; Institutional Controls; Metals; O&M; Organics; RCRA; Soil; State Criteria; TCE; VOCs.

NEW BRIGHTON/ARDEN HILLS/ST. ANTHONY, MN
Fifth Remedial Action
March 31, 1987

ROD ABSTRACT

The New Brighton/Arden Hills/St. Anthony site is located approximately two miles north of the Twin Cities of Minneapolis/St. Paul, Minnesota. The City of St. Anthony, located directly north of the Twin Cities, is one of several communities which obtains its municipal water supply from the Prairie du Chien-Jordan aquifer system. The City of St. Anthony obtains its water supply from well numbers 4 and 5 and an interconnection to the City of Roseville's water distribution system. In June 1981, the Minnesota Pollution Control Agency (MPCA) and the Minnesota Department of Health (MDH) detected VOC contamination in the Praire du Chien-Jordan aquifer system used for municipal drinking water in New Brighton. Subsequently, the City of St. Anthony has also detected VOC contamination in their three Praire du Chien-Jordan aquifer wells; well numbers 3, 4, and 5. Well 4 is the city's major source of water. Well 5 and the Roseville interconnection are used for summer, peak, or emergency situations. Well 3 was shut down in early 1984 due to VOC contamination. As the number of contaminated wells within the Praire du Chien-Jordan began increasing, EPA initiated several Initial Remedial Measures. In 1983, granular activated carbon filters were installed on New Brighton wells 5 and 6 and several private well users were connected to New Brighton and Arden Hill's water mains. In 1984, the City of St. Anthony received a temporary water connection to the City of Roseville due to water shortages resulting from subsequent closure of a contaminated well. The primary contaminants of concern affecting the ground water include: TCE, DCE, and VOCs.

The selected remedial action for this site incudes: construction of granular activated carbon (GAC) water treatment facilities to remove VOCs from St. Anthony wells 3, 4, and 5 with discharge to the municipal water treatment plant and distribution system; and construction of a pipeline to connect St. Anthony well 5 with the GAC treatment facilities. Total capital costs for the selected remedial action is estimated to be $1,100,500 with annual O&M of $160,770.

PERFORMANCE STANDARDS OR GOALS: Ground water treatment will attain the MCL for TCE 5.0 ug/l. MCLs for other VOCs have not been exceeded.

INSTITUTIONAL CONTROLS: Not applicable.

KEYWORDS: Alternate Water Supply; ARARs; Drinking Water Contaminants; Granular Activated Carbon; Ground Water; Ground Water Monitoring; Ground Water Treatment; MCLs; Onsite Treatment; Organics; TCE; VOCs.

NEW BRIGHTON/TWIN CITIES ARMY AMMUNITION PLANT, MN
Third Remedial Action
September 25, 1987

ROD ABSTRACT

The Twin Cities Army Ammunition Plant (TCAAP) is located north of the Twin Cities of Minneapolis/St. Paul, Minnesota and comprises the northern edge of the New Brighton/Arden Hills/St. Anthony (NBAHSA) Superfund NPL site. Fourteen identified source areas exist in the TCAAP and three sites are expected to be the source of VOC contamination emanating from the southwest boundary. The U.S. Army estimates approximately 26 pounds per day of volatile organic contaminants are migrating into the ground water at the southwest boundary of TCAAP. This contamination is migrating in both the Hillside Sand Aquifer and the deeper Prairie du Chien/Jordan Aquifer (both are aquifers that supply water to the cities of New Brighton and St. Anthony). Both of these cities have made modifications to their water supply due to ground water contamination. From 1982 to 1984, various municipal wells were deepened, shut down, or had carbon filters installed. Several private well users adjacent to the TCAAP site were connected to city water supplies. Three previous RODs for the NBAHSA site have recommended an additional well for New Brighton from an alternate aquifer, carbon treatment for two of St. Anthony's wells, and construction of a Boundary Ground Water Recovery System (BGRS) to intercept the contaminant plume. This operable unit source control ROD addresses operation of the BGRS, collection of operating data in order to evaluate the system, and modification of the system, as necessary, to ensure interception of contaminated ground water in the two affected aquifers. The primary contaminants of concern affecting the ground water include: PCBs, benzene, toluene, TCE, VOCs, arsenic, chromium, lead, and metals.

The selected remedial action for this site includes: operation of a six-well system to extract ground water migrating from the southwest corner of TCAAP and treatment with air stripping. Approximately 300,000 gallons per day will be utilized for in-plant use with the remainder disposed by reinjection/infiltration through the arsenal sand and gravel pit; evaluation of operating data and monitoring results; and implementation of any additional measures required to capture contaminated ground water migrating from the site. The estimated capital cost for this remedial action is $4,000,000 with annual O&M of $120,000. Additional capital expenditures may occur if modifications to the system are needed to achieve adequate water quality.

PERFORMANCE STANDARDS OR GOALS: During all phases of the remedy, the protection of receptors will be based on the 10^{-6} cumulative carcinogenic risk-based criteria. Discharged water will, at a minimum, meet MCL standards, which include: benzene 5.0 ug/l; toluene 2,000.0 ug/l; TCE 5.0 ug/l; PCE 6.9 ug/l; vinyl chloride 2.0 ug/l; xylene 440.0 ug/l; arsenic 50.0 ug/l; and chromium 50.0 ug/l.

NEW BRIGHTON/TWIN CITIES ARMY AMUNITION PLANT, MN
Third Remedial Action
(Continued)

INSTITUTIONAL CONTROLS: Not applicable.

KEYWORDS: Air Stripping; ARARs; Arsenic; Benzene; Carcinogenic Compounds; Chromium; Clean Air Act; Direct Contact; Drinking Water Contaminants; Ground Water; Ground Water Monitoring; Ground Water Treatment; MCLs; Metals; O&M; Onsite Treatment; Safe Drinking Water Act; TCE; Toluene; VOCs.

NORTHERN ENGRAVING, WI
First Remedial Action - Final
September 29, 1987

ROD ABSTRACT

The Northern Engraving Corporation (NEC), located in Sparta, Wisconsin, presently owns and operates a manufacturing facility at the site, which produces metal name plates, dials and decorative trim for the automotive industry. The majority of the land within the Sparta area is zoned for general agriculture, which includes livestock raising, nursery, greenhouse, and poultry farming. Four separate areas of contamination at the NEC facility have been identified as potential sources of soil, ground water, and surface water contamination. They include the sludge lagoon, seepage pit, sludge dump site, and lagoon drainage ditch. The chemical constituents found in these areas are from past waste water treatment and disposal practices employed at the site. Since the 1960s, waste rinse waters, by-products of the metal finishing process, have been treated onsite. An onsite waste water treatment lagoon was installed in 1967. Rinse water from the plant was collected and treated with sodium hydroxide for precipitation to metal hydroxide solids. The treated rinse water was discharged to the sludge lagoon to allow solids to settle. The treated lagoon effluent was discharged to the LaCrosse River by way of a storm drainage ditch. Between 1968 and 1976, the sludge lagoon accumulated solids from the treated waste water. On two ocasions, sludge was removed from the lagoon and landfilled in an onsite dump area. The sludge lagoon was eventually removed from service in 1980, by which time two to four feet of metal hydroxide sludge had accumulated on the bottom of the lagoon and presently remains. An onsite seepage pit was employed to neutralize spent waste. It was removed from service, filled with approximately five feet of clean fill and graded in 1981. A new above ground onsite waste water treatment system was installed in 1976 and modified in 1984 to meet more stringent State effluent standards. Approximately 900 yd^3 of sludge is contaminated with phosphorous, aluminum, cadmium, copper, nickel, iron, and fluoride. The drainage ditch is contaminated with fluoride, aluminum, chromium, and copper. The seepage pit is contaminated with trichloroethylene (TCE). Ground water is contaminated with copper, nickel, and zinc.

The selected remedial action includes: excavation and onsite solidification of approximately 4,400 yd^3 of sludge and soil; installation of a RCRA cover atop the lagoon; application of access and deed restrictions to the seepage pit property; and ground water monitoring. The total estimated capital cost is $295,000 with annual O&M of $16,000.

PERFORMANCE STANDARDS OR GOALS: Ground water contamination at the site will be managed through the use of alternate concentration limits (ACLs), which are protective of the river. They include: TCE 21,900.0 ug/l; copper 12.0 ug/l; nickel 160.0 ug/l; and zinc 110.0 ug/l.

NORTHERN ENGRAVING, WI
First Remedial Action - Final
(Continued)

INSTITUTIONAL CONTROLS: The State will restrict access to the seepage pit property and restrict future land development through deed restrictions and water well construction.

KEYWORDS: ACLs; ARARs; Capping; Clean Closure; Deed Restrictions; Direct Contact; Excavation; Flood Plain; Ground Water; Ground Water Monitoring; Inorganics; Institutional Controls; Metals; O&M; Onsite Disposal; Onsite Treatment; RCRA Closure; Soil; Solidification; Surface Water; TCE; Treatment Technology; VOCs; Water Quality Criteria.

NORTHSIDE SANITARY LANDFILL/
ENVIRONMENTAL CONSERVATION AND CHEMICAL CORPORATION, IN
First Remedial Action
September 29, 1987

ROD ABSTRACT

The Northside Sanitary Landfill (NSL) and the Environmental Conservation and Chemical Corporation (ECC) are adjacent sites located in Boone County, Indiana. These two sites have been combined into the first remedial action because of their close proximity and similarities in contaminants, affected media, remediation needs, and regulatory status. Between 1977 and 1982, ECC was involved in the recovery, reclamation, and brokering of primary solvents, oils, and other wastes received from industrial clients. Waste products were received in drums and bulk tankers and prepared for subsequent reclamation or disposal. Onsite accumulation of contaminated stormwater, poor management of drum inventory, and several spills prompted State and EPA investigation of ECC. Between 1977 and 1981, some still bottom and oily liquid wastes were permitted to be disposed of at NSL. In May 1982, ECC was ordered by the court to close and environmentally secure the site for failure to produce hazardous waste inventories. Two emergency actions, in March 1983 and March 1985, eliminated the major sources of contamination at the site. Onsite soil contains high concentrations of VOC compounds including: trans-1,2-DCE, trichloroethene, 1,1-DCE, and vinyl chloride. The possibility exists for the presence of other sources of contamination at the site. Sometime between 1955 and 1962, NSL began landfill operations. From 1972 to 1973, numerous operational deficiencies, including failure to cover refuse, surface burning, underground fires, leachate, and vermin problems, resulted in three Indiana State Board of Health (ISBH) orders to cease operations. By February 1975, operations were permitted at the site. By November 1982, NSL had accepted at least 16,000,000 gallons of hazardous substances. The primary contaminants of concern affecting the ground water, surface water, soil, and sediments include: inorganics, organics, pesticides, acids, base-neutral compounds, oils, and VOCs (benzene, 1,1-DCE, TCE).

The selected remedial action for the two sites combined includes: implemention of deed and access restrictions to prevent future site development; excavation and dewatering of 4,200 yd^3 of leachate soils and sediments with onsite disposal under a RCRA multi-layer cap; soil capping over non-RCRA capped areas; site grading; demolition of the former ECC process building followed by capping; surface water rerouting; collection and treatment of leachate at NSL; and implemention of ground water collection and onsite treatment for both sites. The estimated present worth cost for this remedial action is $33,900,000.

PERFORMANCE STANDARDS OR GOALS: Cleanup goals will be consistent with MCL, MCLG, and Federal and State Ambient Water Quality Criteria for the protection of aquatic life and consumption of aquatic organisms in a nearby stream. Specific goals include: benzene 5.0 ug/l; 1,1-DCE 7.0 ug/l; arsenic 50.0 ug/l; lead 50.0 ug/l; and TCE 200.0 ug/l.

NORTHSIDE SANITARY LANDFILL/
ENVIRONMENTAL CONSERVATION AND CHEMICAL CORPORATION, IN
First Remedial Action
(Continued)

INSTITUTIONAL CONTROLS: Deed and access restrictions will be implemented at both sites to prevent future development of the land.

KEYWORDS: Acids; ARARs (Chemical-Specific: Benzene. Action-Specific: Capping.); Benzene; Carcinogenic Compounds; Capping; Deed Restrictions; Direct Contact; Drinking Water Contaminants; Excavations; Ground Water; Ground Water Monitoring; Ground Water Treatment; Inorganics; Institutional Controls; Leachate Collection/Treatment; MCLs; MCLGs; Metals; Oils; O&M; Onsite Disposal; Onsite Treatment; Organics; PAHs; PCBs; Pesticides; Public Exposure; RCRA Landfill Closure; Safe Drinking Water Act; Sediments; Soil; State Criteria; Surface Water; TCE; VOCs; Water Quality Criteria.

ROSE TOWNSHIP, MI
First Remedial Action - Final
September 30, 1987

ROD ABSTRACT

The Rose Township Dump site is located in rural Rose Township, Oakland County, Michigan. The 110-acre site comprises an upland area almost completely surrounded by wetlands, with an abundance of wildlife onsite. From 1966 to 1968, an unknown number of drums containing solvents, paint sludges, and PCBs were buried in a 12-acre portion of the site. Bulk wastes were also discharged to the surface or into shallow lagoons or pits in the area. In June 1979, the Michigan Department of Natural Resources (MDNR) tested domestic wells in the area and found low level TCE and PCE contamination. This contamination made it necessary to supply bottled water to residents. Based on 1979 drum sampling results, funds were appropriated for an immediate removal action, which disposed of over 5,000 drums offsite. Further testing, between 1980 and 1982, indicated the presence of organic chemical contamination in the ground water. Currently, the primary contaminants of concern affecting the soil and ground water include: VOCs, PAHs, PCBs, organics, and inorganics.

The selected remedial action includes: excavation of as much as 50,000 yd^3 of contaminated soil; onsite thermal destruction of contaminants in the excavated soil with disposal of resultant ash (either onsite or offsite depending on the results of EP toxicity testing); and ground water pump and treatment using chemical coagulation, air stripping, and activated carbon adsorption with discharge to an appropriate place. The estimated capital cost for this remedial action is $32,547,000 with annual O&M of $200,000 for years 1-10 and $70,000 for years 10-30.

PERFORMANCE STANDARDS OR GOALS: Cumulative ground water and soil cleanup levels will attain the 10^{-6} cancer risk level. Specific ground water cleanup goals include: vinyl chloride 0.015 ug/l (MCL); arsenic 50.0 ug/l (MCL), lead 50.0 ug/l (MCL); chlorobenzene 60.0 ug/l (proposed MCLG); benzene 0.133 ug/l; TCE 0.627 ug/l; PCBs 0.002 ug/l; and methylene chloride 0.919 ug/l. Specific soil cleanup goals include: arsenic 14.0 mg/kg; PCBs 10.0 mg/kg; and lead 70.0 mg/kg.

INSTITUTIONAL CONTROLS: Not applicable.

KEYWORDS: Air Stripping; ARARs; Clean Water Act; Direct Contact; Excavation; Ground Water; Ground Water Treatment; Incineration; Inorganics; MCLs; O&M; Offsite Disposal; Onsite Incineration; Organics; PAHs; PCBs; Public Exposure; RCRA Closure Requirements; Safe Drinking Water Act; Soil; VOCs; Wetlands.

SCHMALZ DUMP, WI
Second Remedial Action - Final
September 30, 1987

ROD ABSTRACT

The Schmalz Dump site, occupying approximately seven acres of the Waverly Beach wetlands area, is located on the north shore of Lake Winnebago in the town of Harrison, Wisconsin. Industries dumped wastes at various locations along the north shore of Lake Winnebago for several years. Mr. Gerald Schmalz, the previous site owner, began filling his property in 1968. Records show that hauled wastes consisted of solid wastes, car bodies, stone, trees, pulp chips, and mash. Between 1972 and 1973, the site accepted fly ash and bottom ash from Menasha Utility and, in 1978 and 1979, Schmalz accepted the demolition debris of a building owned by the Allis-Chalmers Corporation. Initial onsite sampling, in early 1979, determined that an area containing the Allis-Chalmers debris was contaminated with concentrations of PCBs as high as 3,100 mg/kg with lead and chromium also detected in relatively high concentrations. In August 1985, a ROD was signed approving an operable unit to address the PCB contamination. This second operable unit addresses soil contamination with lead and chromium^{+3}.

The selected remedial action for this site includes: installation of a low permeability, compacted earth material cap over approximately seven acres of lead and chromium contaminated soils; installation of a slurry wall; and implementation of ground water monitoring. A voluntary well abandonment program for nearby wells is also proposed. The estimated capital cost for this remedial action is $687,664 with annual O&M of $17,940.

PERFORMANCE STANDARDS OR GOALS: Chromium^{+3} detected in ground water did not exceed the MCL (50.0 ug/l), and lead was not reported above the detection units. Ground water and leachate release at the site are in compliance with the Safe Drinking Water Act without implementing treatment. Capping will comply with the State Solid Waste Management Administrative Rule, Chapter NR 180 WAC.

INSTITUTIONAL CONTROLS: Not applicable.

KEYWORDS: ARARS; Capping; Chromium; Direct Contact; Ground Water; Ground Water Monitoring; Lead; MCLs; Metals; O&M; Onsite Disposal; Safe Drinking Water Act; Slurry Wall; Soil; State Criteria; Wetlands.

SEYMOUR, IN
Second Remedial Action - Final
September 25, 1987

ROD ABSTRACT

The Seymour Recycling Corporation (SRC) site, encompassing a 14-acre area, is approximately two miles southwest of Seymour, Indiana. SRC and its corporate predecessor, Seymour Manufacturing Company, processed, stored, and incinerated chemical wastes at the site from about 1970 to early 1980. The facility was closed when SRC failed to comply with a 1978 agreement with the State of Indiana to cease receiving wastes and to institute better waste management practices. In 1980, several thousand drums were removed from the site by two potentially responsible parties (PRPs). In 1981, EPA removed chemicals from tanks at the site and disposed of those wastes offsite. A 1982 Consent Decree with potential PRPs resulted in the removal, between December 1982 and January 1984, of approximately 50,000 drums, 100 storage tanks, and the first foot of contaminated soil from about 75 percent of the site's surface. A Record of Decision, signed in September 1986, evaluated the stabilization of the ground water plume emanating from the site and selected the implementation of a plume stabilization system to extract, treat and discharge ground water to a waste water treatment plant. Currently a shallow aquifer under and just beyond the site boundaries, serves approximately 100 residences and businesses. The primary contaminants of concern to the ground water, soil, and sediments include: more than 35 different hazardous chemicals, such as 1,2-dichloroethane, benzene, vinyl chloride, and 1,1,1-trichloroethane.

The selected remedial action for this site includes: deed and access restrictions and other institutional controls; implementation of a full-scale soil vapor extraction system; ground water extraction and treatment by air stripping; mixed-media capping; and excavation of 800 yd^3 of contaminated creek sediment and consolidation of the sediment beneath the cap. The estimated capital cost for this remedial action is $10,536,000 with present worth O&M of $7,200,000.

PERFORMANCE STANDARDS OR GOALS: Ground water will be restored to attain a cumulative excess cancer risk of 10^{-5} at and beyond the site boundaries. The remedy meets individual MCLs for carcinogenic compounds, which include: benzene 5.0 ug/l; chloroform 100.0 ug/l; 1,2-dichloroethane 5.0 ug/l; 1,1-dichloroethane 7.0 ug/l; trichloroethene 5.0 ug/l; and vinyl chloride 2.0 ug/l. Noncarcinogenic compounds will attain the chronic health index levels and include: barium 50.0 ug/l; cadmium 10.0 ug/l; and lead 50.0 ug/l.

INSTITUTIONAL CONTROLS: Deed restrictions will prohibit excavation of soil, onsite building construction, offsite ground water extraction, and limit adjacent land use.

SEYMOUR, IN
Second Remedial Action - Final
(Continued)

KEYWORDS: Air Stripping; ARARs; Benzene; Capping; Clean Air Act; Deed Restrictions; Direct Contact; Drinking Water Contaminants; Excavation; Ground Water; Ground Water Monitoring; Institutional Controls; MCLs; O&M; Offsite Disposal; Onsite Treatment; Organics; Public Exposure; RCRA; Safe Drinking Water Act; Sediments; Soil; State Criteria; Treatability Studies; Treatment Technology; VOCs.

BAYOU BONFOUCA, LA
Second Remedial Action - Final
March 31, 1987

ROD ABSTRACT

The Bayou Bonfouca site is an abandoned creosote works facility that was operational from 1892 to 1970. It is located north of Lake Pontchartrain in Slidell, Louisiana in a 100-year flood plain, and is characterized by standing water and saturated surface soil. The creosote plant treated pilings for use in railway construction. Over the years the plant operated under the ownership of various creosote companies. The Braseman Corporation presently owns the property. Numerous creosote releases occurred during the years of operation. Since 1976, numerous studies examined the extent of the problems originating from the Bayou site. An August 1985 Record of Decision (ROD) selected excavation and offsite landfilling of creosote waste piles as a source control remedy. The remedial design and remedial action activities associated with this phase experienced delays due to the pending reauthorization of Superfund. A Supplemental Phase II Remedial Investigation, to determine the extent of soil contamination beyond that of the Phase I investigation, was completed in June 1986. In July 1986, citizens requested a 3-month extension through October 1986 of the public comment period. During this extension, SARA was signed and the proposed selected remedy did not fully comply with the provision of the Act. Since 1986, numerous studies have been undertaken to examine the extent of the problems originating from the site. These studies indicated that 20,000 yd^3 of soil, 46,500 yd^3 of sediments, and potentially, ground water are contaminated with polynuclear aromatic hydrocarbons (PAHs) including: benzo(a)pyrene, benzo(a)anthracene, benzo(b)flouranthene, benzo(k)fluoranthene, indeno(1,2,3-cd)pyrene, and chrysene.

The selected remedial action for this site includes: incineration of 5,000 yd^3 of surface creosote accumulations in a mobile unit; incineration of 46,500 yd^3 of contaminated sediments from the bayou, creek, and channel bottoms; isolation followed by drainage and dredging of one half of the bayou; excavation of sediment to about five feet or to a depth that will ensure mitigation of the source of ground water contamination by creosote; routing the flow through the clean area upon completion of excavation and then, drainage and dredging of the opposite side of the bayou; dewatering of bayou sediments prior to offsite transportation; onsite treatment and discharge to the bayou of water drainage from the dewatered side of the bayou, along with drainage associated with the dewatering activities; RCRA capping of contaminated soil (20,000 yd^3; 34 acres); and remediation of ground water through a pump, treatment, and reinjection process. The estimated capital cost for this remedial action is $59,594,534 with annual O&M of $173,748.

PERFORMANCE STANDARDS OR GOALS: Contaminated sediments will be excavated either to a depth of 6 feet or until PAH contamination is less than 1,300.0 mg/kg. At the completion of remediation activities that portion of the site (approximately 34 acres) with contaminated soil above 100.0 mg/kg total carcinogenic PAHs will be RCRA capped. The Clean Water Act drinking water criteria suggest a 3.1 ng/l ground water level for PAHs. It is not yet known if this target level is technologically achievable, however, the ground water target cleanup will be a health-based 10^{-4} or 10^{-6} risk level, as per Feasibility Study guidance.

INSTITUTIONAL CONTROLS: Not applicable.

KEYWORDS: ARARs; Capping; Direct Contact; Excavation; Flood Plain; Ground Water; Ground Water Treatment; Incineration; O&M; Onsite Disposal; Offsite Disposal; PAHs; RCRA Landfill Closure; Sediments; Soil; Treatment Technology; Wetlands.

BAYOU SORREL, LA
First Remedial Action - Final
November 14, 1986

ROD ABSTRACT

The Bayou Sorrel site is located in Iberville Parish, Louisiana, approximately 20 miles southwest of Baton Rouge, LA. Fifty acres of the 265-acre site have been used for waste disposal. The waste disposal areas consist of four landfills: a spent lime cell, a crushed drum cell, four covered liquid waste ponds, and a landfarm. The remaining acres are covered by dense brush and trees. The entire site has a marshy, bayou-type environment and is prone to flooding and poor drainage. Early in 1977, the Environmental Purification Advancement Corporation (EPAC) began operating the Bayou Sorrel site. A sister firm, Clean Land Air Water, Inc. (CLAW) operated an injection well approximately six miles south of the site. EPAC operations included landfarming, open liquid impoundments, drum burial, and landfilling of chemically fixed wastes. The fixation process is unknown but may have included lime, cement, and native soil. EPAC and CLAW were two separate operations. However, it was suggested that wastes from the injection well were diverted to EPAC when process problems at the well caused a bottleneck. In the summer of 1978, a truck driver died at the site. It is suspected he died as a result of inhaling hydrogen sulfide gas created when liquid wastes were dumped into the receiving pond. State and Federal regulatory officials inspected the site following this incident. Unknown materials were found in large, open, unpermitted ponds, and the site was ordered closed. Approximately 36,400 yd^3 of wastes remain onsite following the September 1978 closure activities. The primary contaminants of concern affecting the ground water and soil include: sulfide wastes, pesticide/herbicide process wastes, and spent wash solutions. Localized surface soil contaminated with herbicides and other organic compounds was found at the south end of the site.

The selected remedial action for this site includes: regrading the site to control runoff, limit cap erosion, limit surface water ponding and divert storm water from waste areas; RCRA top-soil/geomembrane/clay capping of former disposal areas; installation of a sand/geofabric pore water drainage layer above the wastes and below the cap, including a venting system to reduce buildup of methane and other gases beneath the cap; consolidation of all miscellaneous wastes outside currently capped areas under the new caps for grading and fill purposes or disposing of wastes at an offsite facility; installation of a 30-foot deep slurry wall around the former landfill area and a shallow slurry wall around the former Pond 4 area; fencing all capped areas to restrict access; constructing gravel access roads around fenced areas to allow continued recreational use of adjacent lands and borrow lake while diverting traffic around and away from the disposal areas; and installation of a ground water monitoring system. The estimated capital cost for this remedial action is $23,200,000 with present worth O&M of $5,700,000.

BAYOU SORREL, LA
First Remedial Action-Final
(Continued)

PERFORMANCE STANDARDS OR GOALS: Chemical-specific cleanup levels were not specified.

INSTITUTIONAL CONTROLS: Not applicable.

KEYWORDS: ARARs; Capping; Onsite Containment; Excavation; Ground Water; Ground Water Monitoring; Offsite Disposal; O&M; Onsite Disposal; Organics; Pesticides; RCRA Closure Requirements; Sediments; Surface Water; Surface Water Diversion/Collection; Slurry Wall; Soil; Venting; VOCs.

CLEVE REBER, LA
First Remedial Action
March 31, 1987

ROD ABSTRACT

The Cleve Reber site is located in Ascension Parish between Baton Rouge and New Orleans, Louisiana. Originally a burrow pit for the construction of a local highway, it was subsequently used between 1970 and 1974 as a landfill for both municipal and industrial waste . There are an estimated 6,400 drums containing chemical wastes buried at shallow depths on this 24.6-acre site. The site and surrounding area, relatively flat and exhibiting the charateristics of high-water areas prone to flooding and poor drainage, lies within the theoretical 100-year flood plain. The site currently contains four surface water ponds. No records of the waste received at the site are available. The wastes were reportedly segregated into municipal and chemical waste piles, and then landfilled. Volatile chemical wastes reportedly caused nausea and illness to the landfill employees during handling and disposal. In 1974, the site was abandoned and, in 1979, declared an abandoned hazardous waste site by the State. In 1983, the State fenced the site due to community concern and, in July 1983, EPA conducted an emergency removal. Surface waste piles, and approximately 1,100 surface barrels were removed offsite. A thin, clay cap was placed over the areas thought to contain buried drums/wastes. After two comprehensive field investigation efforts, one began in July 1984 and one began January 1986, EPA determined that all significant contamination was restricted to the site. The primary contaminant of concern affecting the ground water, soil, surface water, and sediments is hexachlorobenzene (HCB) which is associated with the buried drums and bulk sludges. Because HCB has a high affinity for clays, and due to the slight ground water gradient, it has not spread beyond the site boundaries. However, the potential exists for future migration and contamination.

The selected remedial action for this site includes: excavation and onsite incineration of buried drums and sludges; drainage and backfilling of onsite ponds with solidification of nonincinerable wastes, notably mercuric sulfide; capping the portion of the site used for the disposal of industrial/hazardous waste; and ground water monitoring. The estimated capital cost for this remedial action is $25,000,000 with annual O&M of $100,000.

PERFORMANCE STANDARDS OR GOALS: Current remediation will prevent contamination from migrating and will attain the 10^{-6} carcinogenic risk level through Clean Water Act criteria. Specific cleanup goals include: hexachlorobutadiene 0.45 ug/l; hexachlorobenzene 21.0 ug/l; and hexachloroethane 2.4 ug/l.

INSTITUTIONAL CONTROLS: Not applicable.

CLEVE REBER, LA
First Remedial Action
(Continued)

KEYWORDS: ARARs; Capping; Debris; Direct Contact; Excavation; Filling; Flood Plain; Ground Water; Ground Water Monitoring; Incineration; Metals; O&M; Onsite Disposal; Onsite Treatment; Organics; RCRA Closure Requirements; Sediments; Sludge; Soil; Solidification; Surface Water; Treatment Technology; Wetlands.

COMPASS INDUSTRIES LANDFILL, OK
First Remedial Action - Final
September 29, 1987

ROD ABSTRACT

The Compass Industries site is an abandoned landfill west of Tulsa, Oklahoma and in close proximity to a county recreational facility. The landfill is situated 200 feet above the Arkansas River, into which surface water drains from the site in the form of runoff, springs, and streams. From 1930 through 1950, the site operated as a limestone quarry. From 1972 to 1976, it operated as one of the major landfills for municipal and industrial wastes in the Tulsa area under permit by the Oklahoma State Department of Health. Evidence exists, however, that dumping occurred as early as 1964. Few records were kept on the exact type, quantity, and location of wastes in the landfill during its operation, although, during the 1970s and 1980s, air quality monitoring identified organic chemicals at non-hazardous levels. Sampling performed in conjunction with the remedial investigation identified numerous organic and inorganic pollutants. The total volume of waste is estimated to be 620,000 yd^3. The primary contaminants of concern affecting the shallow aquifer and overlying soil include: inorganics (zinc, lead, copper, barium, chromium) and organics (2-methynaphthalene, phenanthrene, bis(2-ethylhexyl)xylenes, benzo(b)-fluoranine, benzo(a)anthylenepyrene phthalate).

The selected remedial action for this site includes: Ground water extraction and onsite treatment in upper perched water bearing zone; RCRA capping, site grading, surface water diversion, and air emissions monitoring; installation of security fences and warning signs; and implementation of ground water and air monitoring analysis programs. The estimated capital cost for this remedial action is $9,255,526 with annual O&M of $272,830.

PERFORMANCE STANDARDS OR GOALS: Chemical-specific cleanup goals were not specified.

INSTITUTIONAL CONTROLS: Not applicable.

KEYWORDS: Air Monitoring; ARARS; Capping; Chromium; Clean Water Act; Direct Contact; Ground Water; Ground Water Monitoring; Inorganics; Lead; O&M; Onsite Disposal; Organics; RCRA; Soil; Surface Water Diversion/Collection; Venting.

CRYSTAL CITY AIRPORT, TX
First Remedial Action - Final
September 29, 1987

ROD ABSTRACT

The Crystal City Airport (CAA) site, comprising approximately 120 acres, is located in Zavala County, Texas. CCA began operations during World War II as a military installation for transporting and detailing persons of Japanese descent. In 1949, the U.S. Government deeded the airport to Crystal City. Since that time, the city has operated the facility as a municipal airport. Several private companies conducted aerial pesticide-applicating businesses at the airport until 1982. In April 1983, the Texas Department of Water Resources investigated the site because of the potential threat to local residents of waste pesticides left by aerial applicators. These companies are no longer in operation. Surficial soil at the site was found to be highly contaminated with pesticides. In October 1983, an Immediate Removal Action, initiated by EPA, consolidated 40 yd^3 of waste and 50-70 drums in two onsite disposal cells. In May 1984, a second removal action disposed of 19 drums offsite and secured the site with a fence. Approximately 12,000 yd^3 of surface soil are contaminated with pesticides (DDT, toxaphene) and arsenic.

The selected remedial action for this site includes: onsite consolidation of contaminated soil, drums, and buildings; multi-layer RCRA capping; deep-well injection of decontamination liquids at an offsite well; and fencing. The estimated present worth cost for this remedial action is $1,600,000 which includes O&M.

PERFORMANCE STANDARDS OR GOALS: Following remediation, total pesticides will attain the 10^{-6} cancer risk level value of 100.0 mg/kg. Debris cleanup will be based on visible inspection.

INSTITUTIONAL CONTROLS: Not applicable.

KEYWORDS: ARARs; Arsenic; Capping; Direct Contact; Metals; Municipally-Owned Site; O&M; Offsite Discharge; Onsite Disposal; Pesticides; Public Exposure; RCRA Closure Requirements; Soil; Water Quality Criteria.

GURLEY PIT, AR
First Remedial Action
October 6, 1986

ROD ABSTRACT

The Gurley Pit site, located within the flood plain of the 15 Mile Bayou, a tributary of the St. Francis river, is 1.2 miles north of Edmondson in Crittenden County, Arkansas. The site is contained on three sides by soybean fields and slopes gently toward the Bayou. The site was a single large pit originally created when a clay deposit was excavated for use as construction material. Currently, the single pit is divided into three cells by earthen dikes. From 1970 to 1975, the Gurley Refining Company operated the pit under an Arkansas Department of Pollution Control and Ecology (ADPCE) permit for the disposal of sludge and filter material from the re-refining of used motor oil. Gurley Refining returned its permit in December 1975 saying the waste disposal had stopped and the site was secure. In May 1978, the U.S. Fish and Wildlife Service reported that overflows from the pit had damaged fish and waterbirds in the Bayou. The 15 Mile Bayou flooded in April 1979 and inundated the pit causing as much as 500,000 gallons of oil to escape from the pit into the surrounding fields and Bayou. The primary contaminants of concern affecting approximately 432,470 ft^3 of sludge, soil, sediments, and oil contained in the pit are lead, barium, zinc, and PCBs.

The selected remedial action includes: construction of an onsite pond water treatment unit with discharge of treated pond water to 15 Mile Bayou; removal of solid contaminants from pond water and disposal with the pit sludge; removal of oil from the pond water by an oil/water separator to be drummed and incinerated in a PCB approved incinerator; excavation and stabilization of pit sludge, sediments, and soil (stabilized materials will be held onsite in the pit's north cell); and onsite capping of stabilized waste. The estimated capital cost for this remedial action is $5,780,000 with annual O&M of $21,000.

PERFORMANCE STANDARDS OR GOALS: The remedy meets RCRA, Clean Air Act, National Ambient Air Quality Standards, and Toxic Substances Control Act criteria. Chemical-specific cleanup levels were not specified. Treated pond water discharge complies with NPDES permit requirements.

INSTITUTIONAL CONTROLS: Not applicable.

KEYWORDS: ARARs; Capping; Clean Air Act; Direct Contact; Excavation; Flood Plain; Incineration; Lead; Metals; O&M; Offsite Discharge; Offsite Treatment; Oil; Onsite Containment; Onsite Disposal; Onsite Treatment; Organics; PCBs; RCRA; Sediments; Sludge; Soil; Stabilization; Surface Water; Treatment Technology; Wetlands.

HARDAGE/CRINER, OK
First Remedial Action
November 14, 1986

ROD ABSTRACT

The Hardage/Criner site is located in McClain County, Oklahoma, approximately 15 miles southwest of Norman, Oklahoma. The area is agricultural with land on all sides of the site used for cattle grazing. From September 1972 to November 1980, the site was operated by the Royal Hardage Industrial - Hazardous Wasteland and Disposal Facility, which was permitted to accept all types of industrial and hazardous wastes except radioactive materials. The types of waste included: oil, recycling wastes, chlorinated solvents, styrene tars, acids, caustics, paint sludges, lead, chromium, cyanide, arsenic, pesticides, inks, PCBs, and large quantities of unknown wastes from injection wells and other facilities including what became the Brio and Bioecology Superfund sites. Originally two pits were excavated. Liquids and sludges from drums and tank trucks were discharged directly into these unlined pits which filled to capacity. Wastes from the pits were transferred to temporary ponds and then piled on a sludge mound. A total of 18,000,000 to 20,000,000 gallons of waste were disposed at the site. In 1978, the State of Oklahoma filed complaints against the facility for suspected lead poisoning of air around the site. In September 1979, the Oklahoma State Department of Health (OSDH) began proceedings to revoke the facility permit for operating unpermitted pits, failure to seal permeable lenses in the pits, improper closure of pits, failure to retain runoff, and improper storage of wastes. Site operations ceased in November 1980. Royal Hardage undertook site decontamination and closure efforts, which extended into 1982. These efforts included: mixing pit fluids with soil; excavating visibly contaminated soils from mixing areas and temporary ponds; capping the source areas with a soil cover; and consolidating wastes in the source areas. The primary contaminants of concern to the soil and ground water include: chlorinated solvents (1,2-dichloroethane, 1,1,2-trichloroethane, 1,1-dichloroethene, tetrachloroethene, trichloroethene), lead, chromium, PCBs, and toxaphene.

The selected remedial action for this site includes: excavation of approximately 180,000 yd^3 from the principal source areas (the drum mound, main pit and sludge mound) to bedrock and separation of wastes; treatment and disposal of solids in an onsite RCRA-constructed and operated landfill cell; incineration of organic liquids; treatment and disposal of inorganic liquids; and temporary closing of former source areas with residual contamination until remedial action is selected under the second operable unit. The estimated capital cost for this remedial action is $68,014,000 with present worth O&M of $2,282,000.

PERFORMANCE STANDARDS OR GOALS: The selection of cleanup levels will be addressed in the second operable unit. Soil-based cleanup levels are not appropriate for this operable unit, which deals exclusively with the concentrated pits and waste piles.

INSTITUTIONAL CONTROLS: Not applicable.

HARDAGE/CRINER, OK
First Remedial Action
(Continued)

KEYWORDS: ARARs; Capping; Carcinogenic Compounds; Chromium; Direct Contact; Excavation; Ground Water; Incineration; Inorganics; Lead; Metals; O&M; Onsite Disposal; Onsite Treatment; Organics; PCBs; PCEs; Pesticides; RCRA Landfill Closure; Soil; TCE; Treatment Technology; VOCs.

HIGHLANDS ACID PIT, TX
Second Remedial Action - Final
June 26, 1987

ROD ABSTRACT

The Highlands Acid Pit site is located 16 miles east of Houston on a 6-acre peninsula in Harris County, Texas. The site is bordered on the west and south by the San Jacinto River, on the north by a wooded area, and on the east by a sand pit. The site lies within the 10-year flood plain and has subsided 2.4 feet since 1964. An unknown quantity of industrial waste sludge was disposed at the site in the 1950s. The sludge is believed to be spent sulfuric wastes from a refinery process. The June 1984 Record of Decision (ROD) addressed the source of contamination. The 1984 ROD remedy included: excavation of waste and soil over a 2.41-acre area down to the water table, with transportation to a permitted Class 1 disposal facility; backfilling of the area with clean fill; installation and operation of a ground water monitoring system; and site maintenance. The majority of information presented in the 1984 ROD was adequate for identifying ground water reclamation alternatives for the Ground Water Feasibility Study (January 1986), however, information on the subsurface environment was inadequate to evaluate any corrective action for the shallow aquifer. The integrity of the clay aquitard separating the upper and middle aquifers and the full extent of ground water contamination were not investigated prior to the Ground Water Study completed in April 1987. The exposure to risks associated with organics, VOCs, and metals, which were present in the shallow ground water upon completion of the 1984 ROD source removal, form the basis for this second operable unit.

The selected remedial action for this site includes a no action remedy with long-term ground water and surface water monitoring since the contaminants of concern were not detected above criteria levels. The estimated capital cost for this monitoring program is $4,700 with annual O&M of $11,120 for year 1 and $6,980 for years 2-30.

PERFORMANCE STANDARDS OR GOALS: Water quality criteria were used to evaluate the effect of upper aquifer contaminants in the surface water. MCL concentrations were used to evaluate the deeper portions of the aquifer.

INSTITUTIONAL CONTROLS: Not applicable.

KEYWORDS: ARARs; Arsenic; Benzene; Chromium; Clean Water Act; Flood Plain; Ground Water; Ground Water Monitoring; MCLs; Metals; No Action Remedy; O&M; Safe Drinking Water Act; Surface Water Monitoring; VOCs; Water Quality Criteria.

MID-SOUTH WOOD PRODUCTS, AR
First Remedial Action
November 14, 1986

ROD ABSTRACT

The Mid-South Wood Products site is located in Polk County, Arkansas approximately 1/2 mile southwest of Mena, Arkansas. The 57-acre site includes the following areas: the Old Plant site, the Small Old Pond and Old Pond areas, the North and South Landfarms, the landfill, Clear Lake and an existing chromated copper arsenate (CCA) treatment plant. The Old Plant site was used to treat wood with pentachlorophenol (PCP) and creosote. The Small Old Pond was the original impoundment for waste PCP and creosote. These two areas have been covered with soil. The Old Pond area was used to store PCP and creosote sludge and has since been graded and covered with soil; materials from the Old Pond were spread over the Landfarm areas and mixed into the soil. The Landfill area contains deposits of sawdust, woodchips, and other waste wood products. Clear Lake receives runoff from all the above areas. The CCA treatment plant contains an ongoing wood treating operation where the surface drainage from the plant is put in sumps. The plant site was originally developed by a lumber company in the late 1930s as a post and pole production plant. In 1967, Edward Hines Lumber Company purchased the plant and operated it as a PCP and creosote wood treating plant until 1977 when the CCA treating process was first introduced at the plant. In September 1978, Edward Hines Lumber Co. sold the plant to Mid-South Wood Products, Inc. Investigation of the Mid-South Wood Products site began in 1976 when several fish kills were reported in waterways downstream of the site. The Arkansas Department of Pollution Control and Ecology (ADPCE) tested the ground water, surface water, ponds, and three wells. They found low levels of PCP in the wells, higher levels of PCP in the surface water samples, and arsenic and chromium in the ground water and surface water. In December 1981, ADPCE concluded that a contamination problem existed and recommended initial remedial actions be taken. Contaminants were found in the site surface soils, surface sediments, surface water, and ground water. The primary contaminants of concern include: creosote compounds (PAHs), PCP, CCA, arsenic, and chromium.

The selected remedial action includes: excavation of onsite contaminated soils, with the exception of those existing in the Old Pond area, and consolidation with the contaminated soils in the North Landfarm area; stabilization of any free oil, liquid, or sludge found in the heavily contaminated area of the Small Old Pond/Old Plant area and placement of these wastes in the North Landfarm area; grading and covering the contaminated soils consolidated in the North Landfarm with RCRA top-soil clay cap; investigation of the Old Pond area to locate any free oil, liquids, or sludges and in-situ stabilization of these materials; RCRA top-soil clay capping in the Old Pond area; remedial action at the CCA treatment facility; completing installation of the french drain system at the site and pumping water to the treatment system; and ground water treatment using carbon filtration. Any ground water found to be contaminated with inorganics will be treated by carbon filtration, then used as makeup water for the CCA treatment facility. Oils and sludges collected in the french drains will be disposed of in at EPA approved hazardous waste disposal facility. Treated water from the ground water treatment facility will be discharged to surface drainage; and a ground water monitoring system will be installed. The estimated capital cost for this remedy is $3,500,000 with annual O&M of $153,500.

PERFORMANCE STANDARDS OR GOALS: The cleanup criteria specify action levels for arsenic and chromium to be set at any concentration that exceeds the range of background concentrations (i.e., arsenic >5.6 mg/kg and chromium >19.4 mg/kg). Cleanup requirements for total carcinogenic PAH compounds (3 mg/kg) will attain a lifetime cancer risk of 10^{-5}.

INSTITUTIONAL CONTROLS: Unspecified deed restrictions will be implemented.

KEYWORDS: ARARs; Arsenic; Capping; Chromium; Deed Restrictions; Excavation; Ground Water; Ground Water Monitoring; Inorganics; Institutional Controls; Oils; O&M; PAHs; RCRA; Sludge; Soil; Stabilization; Surface Water; Treatment Technology.

PETRO-CHEMICAL SYSTEMS, TX
First Remedial Action
March 27, 1987

ROD ABSTRACT

The Petro-Chemical Systems site is a 296-acre tract of land located in Liberty County, Texas. It is in a sparsely populated area seven miles north of I-10 off Frontier Park Road. Waste oils were stored onsite prior to their use, in several pits on approximately four to six acres of the site. Records indicate that waste oils were spread on Frontier Park Road at the site as a method of dust control. In June 1970, all waste oil disposal operations were discontinued and, in 1974, the site's commercial disposal facility permit was withdrawn. The Texas Water Commission (TWC) and EPA conducted preliminary investigations of the site in 1982 and 1984. Elevated concentrations of polynuclear aromatic hydrocarbons (PAHs) were found in the former disposal pits. At the end of 1984, the site was placed on the National Priorities List (NPL). Contamination has been identified in soil along Frontier Park Road. The primary contaminants of concern include: VOCs, PAHs, benzene, and naphthalene. Benzene and naphthalene contamination were found up to a maximum concentration of 2,100 mg/kg and 700 mg/kg, respectively.

The selected remedial alternative includes: excavation of contaminated soil to below 100 mg/kg PAHs with temporary onsite RCRA storage; road construction over the excavated areas and existing roadway; and temporary relocation of onsite residents during construction. The estimated capital cost for the remedial action is $1,232,785 with annual O&M of $4,750.

PERFORMANCE STANDARDS OR GOALS: Soil will be excavated to below 100.0 mg/kg PAHs or 100.0 mg/kg total VOCs.

INSTITUTIONAL CONTROLS: Not applicable.

KEYWORDS: ARARs; Benzene; Direct Contact; Excavation; Leachate Collection/Treatment; O&M; Organics; PAHs; Relocation; Soil; VOCs.

SAND SPRINGS PETROCHEMICAL COMPLEX, OK
First Remedial Action
September 29, 1987

ROD ABSTRACT

The Sand Springs Petrochemical Complex is a 235-acre site in Sand Springs, Oklahoma on the northern bank of the Arkansas River. The site includes acid sludge pits, a surface impoundment, spray ponds, solvent and waste lagoons, surficial sludge contamination, solvent and waste oil lagoons, and contaminated sediments. From the turn of the 20th century through the 1940s, the site operated as a refinery but has since been developed into an industrial area, which now consists of an abandoned solvent and waste oil recycler, an active transformer salvage/recycler, active chemical manufacturers, and various other industries. The total known waste volume is approximately 130,000 yd^3. Sulfuric acid sludge exists in unlined sludge pits and metal and organic wastes are contained in the lagoons, pits, and spray ponds. While both soil and ground water are contaminated, this first operable unit source control ROD addresses surface liquids, sludges, and heavily contaminated soils. The primary contaminants of concern include: bis(2-ethylhexyl)phthalate, toluene, lead, zinc, chromium, and barium.

During the ROD's public comment period, ARCO Petroleum Products Company, one of the potentially responsible parties (PRPs), formally proposed a privately-financed remedy for the site, which is similar to an alternative evaluated by EPA. The PRP will institute this alternate remedy and has agreed to take further corrective action if EPA deems that the remedy has not been effective. Components of ARCO's proposed remedy include: excavation and offsite thermal destruction of sludges; solidification and/or stabilization of all remaining sludges with containment of the resulting matrix in a RCRA onsite hazardous waste cell; and implementation of chemical and physical treatability studies. The estimated capital cost for this remedial action is $37,453,050 with annual O&M of $15,000. PRP replacement costs total $100,000,000.

PERFORMANCE STANDARDS OR GOALS: Treatability tests for solidification and/or stabilization will be performed to assure compliance with Federal and State requirements. Chemical-specific treatment goals were not specified.

INSTITUTIONAL CONTROLS: Not applicable.

KEYWORDS: ARARS; Carcinogenic Compounds; Chromium; Direct Contact; Excavation; Inorganics; Metals; O&M; Offsite Treatment; Onsite Containment; Organics; RCRA; Sludges; Soil; Solidification; Solvents; Stabilization; State Criteria; Surface Water; Toluene; Treatability Studies; Treatment Technology; VOCs.

CONSERVATION CHEMICAL, MO
First Remedial Action - Final
September 30, 1987

ROD ABSTRACT

The 6-acre Conservation Chemical Company (CCC) site is situated on the flood plain of the Missouri River near the confluence of the Missouri and Blue Rivers within the city limits of Kansas City, Missouri. CCC initiated its activities at the site in 1960, beginning with construction of chemical treatment basins, the process area, and a roadway ramp. Waste disposal operations began at the site soon after site costruction was initiated and continued until approximately 1980. The exact nature and quantities of chemicals and wastes handled during the site's active operating period are unknown. Many site operating records are reported to have been destroyed in a 1970 fire. Operating records indicate the primary materials accepted at the CCC site include: organics, solvents, acids, caustics, metal hydroxides, and cyanide compounds. Reports also indicate that pesticides, herbicides, waste oils, organic solvents, halogenated compounds, arsenic, and elemental phosphorus were handled at the site. In addition, there are reports and evidence that pressurized cylinders and other metal containers were placed in the lagoons. The facility handled liquids, sludges, and solids. The above waste totals include 48,000,000 gallons of liquids and sludges and 1,144 tons of solids. Because the records are incomplete, these figures are believed to understate the total quantity of materials brought to the site. Most of the materials reportedly brought to the site were disposed of onsite, with or without treatment. CCC employed a variety of waste handling practices. Residual materials from the various treatment processes were generally disposed of onsite in the basins. Approximately 93,000 yd^3 of materials, including drums, bulk liquids, sludges, and solids were burned at the site. In 1975, the Missouri Department of Natural Resources, Solid Waste Management Program (DNR/SWMP) investigated the site and found it to be operating as a solid waste disposal area. In 1977, the Missouri Clean Water Commission ordered the site closed and covered. At present the site contains miscellaneous surface structures, such as tanks and buildings, and six basins used for storage, treatment, and disposal of a variety of chemicals, liquid wastes, and sludges, which are presently covered. The primary contaminants affecting the soil and ground water include: inorganics, organics, VOCs, metals, and dioxin.

The selected remedial action for this site includes: surface cleanup including demolition and disposal of the existing building, tanks, and debris; installation of a protective surface cap; ground water pump and treatment using sulfide precipitation with discharge to the Missouri River; and offsite ground water monitoring. The estimated capital cost for this remedial action is $8,626,000 with estimated present worth O&M of $12,774,111.

CONSERVATION CHEMICAL, MO
First Remedial Action - Final
(Continued)

PERFORMANCE STANDARDS OR GOALS: The goal of this remedial action is to restore ground water to drinking water quality through MCL, AWQC, and the 10^{-6} health-based risk level targets. Recommended MCL cleanup levels include: arsenic 50.0 ug/l; cadmium 10.0 ug/l; total chromium 50.0 ug/l; lead 50.0 ug/l; TCE 5.0 ug/l; benzene 5.0 ug/l; and vinyl chloride 2.0 ug/l. The AWQC cleanup levels include nickel 13.4 ug/l and zinc 5,000.0 ug/l.

INSTITUTIONAL CONTROLS: Site access restrictions will be implemented.

KEYWORDS: Acids; ARARs; Capping; Carcinogenic Compounds; Clean Water Act; Dioxin; Direct Contact; Drinking Water Contaminants; Flood Plain; Ground Water; Ground Water Monitoring; Ground Water Treatment; Institutional Controls; MCLs; Metals; O&M; Offsite Discharge; Organics; Phenols; RCRA Closure; Safe Drinking Water Act; Soil; Solvents; State Criteria; VOCs; Water Quality Criteria.

MINKER/STOUT/ROMAINE CREEK - ROMAINE CREEK, MO
Second Remedial Action
September 28, 1987

ROD ABSTRACT

The Romaine Creek portion of the Minker/Stout/Romaine Creek site is located in Jefferson County, Missouri, approximately 20 miles southwest of St. Louis. Romaine Creek starts at the Minker area and flows 4.6 miles to its confluence with Saline Creek. Romaine Creek is located in a rural residential area, and is not used for municipal, industrial, or domestic purposes. In the late 1960s and early 1970s, a southwest Missouri chemical plant producing 2,4,5-T and hexachlorophene contracted a waste oil reclaimer to remove process residues. The residues, contaminated with 2,3,7,8-tetrachlorodibenzo-p-dioxin (TCDD) were mixed with waste oils and sprayed as a dust suppressant on a nearby horse arena. In March of 1973, the owner of the horse arena had the contaminated soils removed to various portions of the Minker/Stout/Romaine Creek site. Approximately 120 yd^3 of this soil was used as fill in a ravine on the Minker property and, since 1973, much has eroded into Romaine Creek. In 1982, contaminated soils above 1.0 ug/kg TCDD were excavated from the Minker portion of the site. The primary contaminant of concern is TCDD (dioxin).

The selected interim remedial measure for the Romaine Creek portion of this site includes: excavation and temporary onsite storage of soil and sediments contaminated with greater than 1 ug/kg TCDD (interim storage will be utilized until a final dioxin management option can be selected); and backfilling of the excavated areas with clean material suitable for the establishment of a natural stream bed. The estimated present worth cost for this remedial action is $4,488,000 with annual O&M of $28,000.

PERFORMANCE STANDARDS OR GOALS: Soil and sediments will be excavated until a residual TCDD concentration of less than 1.0 mg/kg remains. However, excavation will not continue beyond a depth of 4 feet or reaching bedrock.

INSTITUTIONAL CONTROLS: Not applicable.

KEYWORDS: ARARs; Carcinogenic Compounds; Dioxin; Direct Contact; Excavation; Interim Remedy; O&M; Onsite Containment; Public Exposure; RCRA; Sediment; Soil; Surface Water; Temporary Onsite Storage.

MINKER/STOUT/ROMAINE CREEK - STOUT, MO
Third Remedial Action
September 28, 1987

ROD ABSTRACT

The Stout portion of the Minker/Stout/Romaine Creek site is located on West Swaller Road near Imperial, Missouri, approximately 20 miles southwest of St. Louis. The Stout portion consists of five private properties, three of which have been purchased by EPA as part of a permanent relocation of area residents. In the late 1960s and early 1970s, a southwest Missouri chemical plant producing 2,4,5-T and hexachlorophene contracted a waste oil reclaimer to remove process residues. These residues, contaminated with 2,3,7,8-tetrachlorodibenzo-p-dioxin (TCDD), were mixed with waste oils and sprayed as a dust suppressant on a nearby horse arena. In March of 1983, the horse arena owner had the contaminated soils removed to various portions of the Minker/Stout/Romaine Creek site. Approximately 700 yd^3 of this soil was used as fill in the Stout area, near two mobile homes. In 1982, EPA sampling revealed high concentrations of TCDD in onsite soils. Later that year, three of the five properties making up the Stout portion were purchased by EPA and the residents were permanently relocated. No removal of contaminated soil has been performed to date. The primary contaminant of concern is TCDD (dioxin).

The selected interim remedial measure for the Stout portion of this site includes: excavation and temporary onsite storage of soils contaminated with greater than 1.0 ug/kg TCDD (interim storage will be utilized until a final dioxin management option can be selected); and backfilling and revegetation of the excavated areas with clean materials. The estimated present worth cost for this remedial action is $5,817,000-$7,018,000 with annual O&M of $6,000.

PERFORMANCE STANDARDS OR GOALS: Soil will be excavated until a residual TCDD concentration of less than 1.0 mg/kg remains. However, excavation will not continue beyond a depth of 4 feet or reaching bedrock.

INSTITUTIONAL CONTROLS: Site access will be restricted and warning signs will be posted.

KEYWORDS: ARARS; Carcinogenic Compounds; Dioxin; Direct Contact; Excavation; Interim Remedy; Institutional Controls; O&M; Onsite Containment; Public Exposure; RCRA; Relocation; Soil; Temporary Onsite Storage.

CENTRAL CITY/CLEAR CREEK, CO
First Remedial Action
September 30, 1987

ROD ABSTRACT

The Central City/Clear Creek site is located in Clear Creek County and Gilpin County in the Colorado Mineral Belts, Colorado. More specifically, the focus is on five abandoned mines/tunnels proximal to the cities of Idaho Springs, Black Hawk, and Central City and the influence of acid mine drainage from those tunnels on adjacent stream courses. Surface water contamination results from acid mine drainage emanating from the five tunnels. Approximately 1,200 lbs per year of dissolved and suspended metals are discharged to the Clear Creek drainage from the five mine tunnels. These dissolved and suspended metal loadings have resulted in a significant depletion of aquatic life and have potential impact to sediments and downstream users of surface water and ground water. The ten contaminants of concern include: aluminum, arsenic, cadmium, chromium, copper, fluoride, lead, manganese, nickel, silver, and zinc.

The selected interim remedial action for this site includes construction of passive treatment systems to treat mine tunnel discharge prior to discharge to surface water. This is the preferred alternative and is contingent upon results of ongoing pilot plant studies. If water quality criteria concentrations cannot be achieved by passive treatment, either a combination system of passive and active treatment systems will be constructed or an active treatment system will be constructed to treat mine tunnel discharge. The estimated capital cost is $1,663,000 (passive treatment) with annual O&M of $115,000.

PERFORMANCE STANDARDS OR GOALS: Upstream water quality criteria concentrations will be used as operational standards for this interim remedy. This remedy is an interim solution for the overall site. Compliance with contaminant-specific ARARs will be addressed in future operable units.

INSTITUTIONAL CONTROLS: Not applicable.

KEYWORDS: ARARs; Arsenic; Chromium; Ground Water; Interim Remedy; Metals; O&M; Offsite Discharge; RCRA; State Criteria; Surface Water; Treatability Studies.

DENVER RADIUM I/12TH AND QUIVAS, CO
Fourth Remedial Action
September 29, 1987

ROD ABSTRACT

The Denver Radium site, located in Denver, Colorado, consists of more than 40 contaminated properties. These properties have been grouped into eleven operable units. This operable unit consists of five Denver Radium site properties which are known collectively as the 12th and Quivas properties. The 12th and Quivas property site consists of approximately 8.1 acres in an industrial use area. In 1979, EPA noted a reference to the National Radium Institute (NRI) in a 1916 U.S. Bureau of Mines report. This reference revealed the presence of 31 radioactive sites in the Denver metropolitan area. In 1913, the NRI was established in Denver as a domestic source of radium which was in high demand as a wonder drug for the treatment of cancer. Subsequently, the Denver radium, vanadium, and uranium industry thrived until the early 1920s, when rich deposits of ore were discovered in Africa. The Pittsburgh Radium Company (PRC), a division of the National Vanadium Products Company, refined ore on Quivas Street until 1924 and is considered the source of contamination on the five 12th and Quivas properties. There is no serious public health risk at present from radium and its associated decay products. However, since radium has a half-life of 1,600 years, there is a long-term potential for increased public health risk if the contaminated media and debris were to be misused or inadvertently spread. The primary contaminants of concern affecting approximately 11,000 yd^3 of soil is radium and its associated decay products.

The selected remedial action for this site includes: capping open areas of soil contamination (7,600 yd^3); excavation of contaminated soil lying under structures on the properties (3,400 yd^3) and placing this material into an onsite temporary storage facility; maintenance of the cap and temporary storage facility until a facility suitable for the permanent disposal of Denver Radium site waste becomes available; and final offsite disposal of the contaminated material to a permanent disposal facility. The estimated present worth cost for this remedial action is $3,702,800 with 5-year O&M of $290,000.

PERFORMANCE STANDARDS OR GOALS: The selected remedy meets EPA Standards for "Remedial Action at Inactive Uranium Processing Sites". The concentration of radium-226 in land averaged over any area of 100 m^2 shall not exceed the background level by more than 5 pCi/g, averaged over the first 15 cm of soil below the surface and 15 pCi/g and averaged over 15 cm thick layers of soil more than 15 cm below the surface. Average annual radon decay product concentrations will not exceed 0.02 WL. The level of gamma radiation will not exceed the background level by more than 20 uR/hr.

DENVER RADIUM I/12TH & QUIVAS, CO
Fourth Remedial Action
(Continued)

INSTITUTIONAL CONTROLS: Not applicable.

KEYWORDS: Air; ARARs; Capping; Debris; Direct Contact; Excavation; Interim Remedy; Offsite Disposal; O&M; Public Exposure; Radioactive Materials; Soil; Temporary Onsite Storage.

DENVER RADIUM II/11th & UMATILLA, CO
Fifth Remedial Action
September 29, 1987

ROD ABSTRACT

The Denver Radium site, located in Denver, Colorado, consists of more than 40 contaminated properties. These properties have been grouped into eleven operable units. This operable unit consists of eleven Denver Radium site properties which are known collectively as the 11th and Umatilla properties. The 11th and Umatilla properties site consists of approximately 24 acres in an area zoned for heavy industrial use. Two-thirds of the 11th and Umatilla properties are located within the designated 100-year flood plain. In 1979, EPA noted a reference to the National Radium Institute (NRI) in a 1916 U.S. Bureau of Mines report. This reference revealed the presence of 31 radioactive sites in the Denver metropolitan area. In 1913, the NRI was established in Denver as a domestic source of radium, which was in high demand as a wonder drug for the treatment of cancer. Subsequently, the Denver radium, vanadium, and uranium industry thrived until the early 1920s, when rich deposits of ore were discovered in Africa. The Schlesinger Radium Company and its successor, Radium Company of Colorado, produced radium on the 11th and Umatilla properties from 1915 to 1921, and is considered to be the source of contamination of the eleven 11th and Umatilla properties. There are approximately 15,400 yd^3 of contaminated material of which 1,000 yd^3 lie under structures and material and 11 ft^2 consist of contaminated roofing from the Rocky Mountain Research building. The primary contaminants of concern are radium, radon gas, and radon decay products. At present, no serious public health risk from radon decay exposure exists. However, a significant increase in risk would occur if any of the contaminated material and debris were to be misused or inadvertently spread.

The selected remedial action for this site includes: excavation of contaminated soil from open areas and from under buildings and placement into an onsite temporary storage facility; decontaminating the roof in the Rocky Mountain Research building (approximately 11 ft^2) and placement in the temporary onsite facility; maintenance of an existing concrete cap; and maintenance of the temporary storage facility until a facility suitable for the permanent disposal of site wastes becomes available; and final offsite disposal of the contaminated material (15,400 yd^3) to a permanent disposal facility. The estimated present worth cost for this remedial action is $4,230,300 with 5-year present worth O&M of $194,700.

PERFORMANCE STANDARDS OR GOALS: The selected remedy meets EPA standards for "Remedial Action at Inactive Uranium Processing sites." The concentration of radium-226 in land averaged over any area of 100 m^2 shall not exceed the background level by more than 5 pCi/g averaged over the first 15 cm of soil below the surface and 15 pCi/g averaged over 15 cm below the surface. Average annual radon decay product concentrations will not exceed 0.02 WL. The level of gamma radiation will not exceed 0.02 WL. The level of gamma radiation will not exceed the background level by more than 20 uR/hr.

DENVER RADIUM II/11th & UMATILLA, CO
Fifth Remdial Action
(Continued)

INSTITUTIONAL CONTROLS: Not applicable.

KEYWORDS: Air; ARARs; Debris; Direct Contact; Excavation; Flood Plain; Interim Remedy; O&M; Offsite Disposal; Public Exposure; Radioactive Materials; Soil; Temporary Onsite Storage.

DENVER RADIUM III, CO
Fifth Remedial Action
September 30, 1987

ROD ABSTRACT

The Denver Radium site, located in Denver, Colorado, consists of more than 40 contaminated properties that have been grouped into operable units. This is the fifth operable unit of the Denver Radium site for which EPA has selected a remedy and is comprised of the 3.4-acre 1,000 West Louisiana vacant lot and the 0.46-acre Creative Illumination property, as well as two contiguous properties, the Packaging Corporation of America and the Colorado Southern Railroad (CSR). A property adjacent to the railroad, Titian Labels, Inc., is included in all discussions of the CSR property. The properties cover approximately 11 acres in an area zoned for industrial use. In 1979, EPA noted a reference to the National Radium Institute (NRI) in the 1916 Bureau of Mines report. This reference revealed the presence of 31 radioactive sites in the Denver metropolitan area. In 1913, NRI was established in Denver as a domestic source of radium, which was in high demand as a wonder drug for the treatment of cancer. Subsequently, the Denver radium, vanadium, and uranium industry thrived until the early 1920s, when rich deposits of ore were discovered in Africa. Subsequent field research revealed the presence of 31 radioactive sites in the Denver metropolitan area, two of which are now included with the 1,000 West Louisiana properties. Immediately after identifying these properties, the Radiation Control Division of the Colorado Department of Health notified the affected property owners of the presence of radiological contamination on their properties. The letters requested that no excavation or soil movement be undertaken without first contacting the division. The primary contaminants of concern affecting 16,000 yd^3 of soil and debris are radium and its associated decay products.

EPA's preferred remedial action for this site is permanent offsite disposal. However, until a facility suitable for permanent disposal of the 1,000 West Louisiana properties material is designated and, if necessary, acquired and developed, this alternative cannot be implemented. The State of Colorado estimates facility selection to take up to five years to complete. The selected remedial action for this site is temporary storage on the Card Corporation property which includes: cleanup of the Creative Illumination property with storage of approximately 200 yd^3 of contaminated material; excavation of the contaminated soil remaining on the 1,000 West Louisiana properties with consolidation and capping on the vacant lot at 1,000 West Louisiana Avenue; capping and storage facility maintenance, until a suitable permanent offsite facility becomes available; and final removal of the contaminated material from both properties to the permanent disposal facility. The estimated capital cost for this remedial action is $2,172,800 with 5-year present worth O&M of $305,800.

PERFORMANCE STANDARDS OR GOALS: The selected remedy meets EPA Standards for "Remedial Action at Inactive Uranium Processing Sites". The concentration of radium-226 in land averaged over any area of 100 m^2 shall not exceed the background level by more than 5 pCi/g averaged over the first 15 cm of soil below the surface and 15 pCi/g averaged over 15 cm-thick layers of soil more than 15 cm below the surface. Average annual radon decay product concentrations will not exceed 0.02 WL. The level of gamma radiation will not exceed the background level by more than 20 uR/hr.

INSTITUTIONAL CONTROLS: Not applicable.

KEYWORDS: Air; ARARs; Capping; Containment; Debris; Direct Contact; Excavation; Interim Remedy; O&M; Offsite Disposal; Onsite Containment; Onsite Disposal; Public Exposure; Radioactive Materials; Soil; Temporary Onsite Storage.

DENVER RADIUM/CARD PROPERTY, CO
Third Remedial Action
June 30, 1987

ROD ABSTRACT

The Denver Radium/Card Corporation property is a 17.2-acre site located in Denver, Colorado. In 1979, EPA discovered a reference to the National Radium Institute in a 1916 U.S. Bureau of Mines report. Subsequent field research revealed the presence of 31 radioactive sites in the Denver metropolitan area, one of these being the Card property, the location of the original Pittsburgh Radium Company processing facility. The site consists of five buildings and an oil and waste water pond at the eastern boundary. Currently, no serious public health risk is present from radium, radon gas, or radium decay products. However, there is the potential for increased public health risk if the radium contaminated materials are misused or inadvertently spread. Currently, the primary contaminant of concern is radium which has been detected in the soil, sediment and underneath the Brick Commercial and UPL building.

EPA's preferred remedial action for the Card property is permanent offsite disposal. However, before this alternative can be implemented a suitable offsite facility must be designated. In the interim, the selected remedial action for this site includes: temporary onsite storage; excavation of approximately 4,000 yd^3 of radium-contaminated soil and sediment; storage of the contaminated material within reinforced synthetic bags placed within the True Truss building and within possible additions to the building; optional staging or storage of contaminated material from selected other Denver Radium site properties on the Card property; final offsite disposal of all contaminated material to a facility suitable for the permanent waste disposal; and decontamination and dismantling of True Truss building, and any additions, with disposal of the material in a sanitary landfill. The estimated present worth cost for this remedial action is $1,148,000 with present worth O&M of $89,500.

PERFORMANCE STANDARDS OR GOALS: The selected remedy meets EPA Standards from "Remedial Action at Inactive Uranium Processing Sites". The concentration of radium-226 in land averaged over any area of 100 m^2 shall not exceed the background level by more than 5 pCi/g averaged over the first 15 cm of soil below the surface and 15 pCi/g averaged over 15 cm thick layers of soil more than 15 cm below the surface. Average annual radon decay product concentrations will not exceed 0.02 WL. The level of gamma radiation will not exceed the background level by more than 20 uR/hr.

INSTITUTIONAL CONTROLS: Not applicable.

KEYWORDS: Air; ARARs; Debris; Excavation; Interim Remedy; O&M; Offsite Disposal; Public Exposure; Radioactive Materials; Sediments; Soil; Temporary Onsite Storage.

DENVER RADIUM/OPEN SPACE, CO
Seventh Remedial Action
September 29, 1987

ROD ABSTRACT

The Denver Radium site, located in Denver, Colorado, consists of more than 40 contaminated properties. These properties have been grouped into eleven operable units. This operable unit consists of eleven Denver Radium properties in an industrial use area, which are known collectively as Open Space properties. Three of the properties lie within the designated 100-year flood plain. In 1979, EPA noted a reference to the National Radium Institute (NRI) in the 1916 Bureau of Mines report. This reference revealed the presence of 31 radioactive sites in the Denver metropolitan area. In 1913, the NRI was established in Denver as a domestic source of radium, which was in high demand as a wonder drug for the treatment of cancer. Subsequently, the Denver radium, vanadium, and uranium industry thrived until the early 1920s, when rich deposits of ore were discovered in Africa. Records indicate that one source of contamination at the Open Space properties results from the radium, vanadium, and uranium processing conducted by the National Radium Corporation, Radium Company of Colorado, Schlesinger Radium Company, and Rocky Mountain Radium Products Company. Additionally, the Allied property, a 21.5-acre portion of the Open Space properties site, contains contaminated fill brought in from an unknown construction site in the early 1960s. The Brannan property, a 47.5-acre portion of the site, is suspected to contain radiological hospital waste. Other sources of radioactive materials present at the site have not been determined. Although presently no serious public health risk from radon decay product exposure exists, a significant increase in risk could occur if the contaminated materials were to be misused or inadvertently spread.

The selected remedial action for this site includes: onsite temporary containment (capping) of approximately 4,320 ft^2 (290 yd^3) of contaminated material followed by offsite permanent disposal consisting of cap removal, excavation, and offsite transportation; and removal of approximately 1,020 yd^3 of material with placement in containers and offsite disposal at the Card Corporation Property, until an offsite permanent disposal facility becomes available. At that time, the temporary storage facility on the Card Corporation property will be decontaminated and, if necessary, dismantled and disposed of at an offsite solid waste disposal facility. The estimated present worth cost for this remedial action is $955,400, which includes 5-year O&M.

PERFORMANCE STANDARDS OR GOALS: The selected remedy meets EPA Standards from "Remedial Action at Inactive Uranium Processing Sites". The concentration of radium-226 in land averaged over any area of 100 m^2 shall not exceed the background level by more than 5 pCi/g averaged over the first 15 cm of soil below the surface and 15 pCi/g averaged over 15 cm thick layers of soil more than 15 cm below the surface. Average annual radon decay product concentrations will not exceed 0.02 WL. The level of gamma radiation will not exceed the background level by more than 20 uR/hr.

DENVER RADIUM/OPEN SPACE, CO
Seventh Remedial Action
(Continued)

INSTITUTIONAL CONTROLS: The city and county of Denver will improve existing institutional controls so that routine maintenance, repair, construction, or removal activities in the Alley will be monitored.

KEYWORDS: Air; ARARs; Capping; Debris; Direct Contact; Excavation; Flood Plain; Institutional Controls; Interim Remedy; O&M; Offsite Disposal; Public Exposure; Radioactive Materials; Soil; Temporary Onsite Storage.

ROCKY MOUNTAIN ARSENAL, CO
First Remedial Action
June 4, 1987

ROD ABSTRACT

The Rocky Mountain Arsenal (RMA) is a facility owned and operated by the U.S. Army. It was established in 1942 with the primary mission of manufacturing and assembling chemical and incendiary munitions to support the war effort. Pesticides and herbicides were then produced "on-post" by private leases. Many of these substances, their by-products and residues were later disposed of on-post. The RMA off-post site is located northeast of downtown Denver, Colorado, adjacent to RMA. The area is almost completely developed with residential subdivisions, industrial facilities, and gravel operations. South Adams County Water and Sanitation District (SACWSD) was created in 1953 to supply approximately 30,000 customers with well water from the alluvium and bedrock. Recent studies by EPA and SACWSD indicate that significant concentrations of organic solvents are present in the local and regional ground water system, which is the main source of drinking water for SACWSD. This operable unit addresses treatment or replacement of contaminated ground water within the RMA off-post site prior to its use as drinking water by customers of the SACWSD. The primary contaminants of concern to the ground water supplying the SACWSD wells include: TCE, PCE, 1,1,1-trichloroethane, 1,1-dichloroethane, 1,1-dichloroethylene, and trans-1,2-dichloroethylene. Other volatile, semi-volatile, and non-volatile organic compounds are present in the ground water in areas adjacent to RMA's off-post site, but have not been detected in SACWSD supply wells to date. Vinyl chloride has also been detected upgradient from the SACWSD wells.

The selected remedial action for this site includes: construction of a granular activated carbon (GAC) water treatment system with regeneration of spent carbon at another location; modification of the GAC system, if necessary, to include an air stripping facility to treat vinyl chloride; replacement of existing well pumps and motors; installation of transmission piping; and construction of laboratory and office space to ensure that the remedy operates effectively. The estimated capital cost for the GAC system is $8,869,000 or $10,100,000 (air stripping) with annual O&M of $372,000.

PERFORMANCE STANDARDS OR GOALS: Treatment will attain MCLs which include: 1,1-dichloroethylene 0.007 mg/l; TCE 0.005 mg/l; PCE 0.005 mg/l; 1,1,1-trichloroethane (TCA) 0.200 mg/l; 1,1-dichloroethylene 0.007 mg/l; trans-1,2-dichloroethylene 0.005 mg/l; and vinyl chloride 0.001 mg/l.

INSTITUTIONAL CONTROLS: Not applicable.

KEYWORDS: Air Stripping; ARARs; Carcinogenic Compounds; Drinking Water Contaminants; Excavation; Granular Activated Carbon; Ground Water; Ground Water Monitoring; Ground Water Treatment; Onsite Treatment; MCLs; O&M; Organics; PCE; TCE; VOCs.

LITCHFIELD AIRPORT, AZ
First Remedial Action
September 29, 1987

ROD ABSTRACT

The Litchfield Airport site, also known as Phoenix-Goodyear Airport (PGA), covers a total area of approximately 35 square miles, and is located approximately 17 miles west of Phoenix, Arizona. The site is divided into a northern and a southern area by a ground water divide running under the Yuma Road area. Section 16 (approximately 17 acres) lies in the southern area and includes the Loral Corporation facility (formerly owned by Goodyear Aerospace Corporation) and the Phoenix-Goodyear Airport (formerly owned by the U.S. Navy), both being potential sources of VOC contamination. Ground water contaminant concentrations in Section 16 are at least 100 times greater than down gradient levels. Development by the City of Goodyear is planned for the area west or downgradient of Section 16. This development will include using the ground water resources currently threatened by the contamination in Section 16. In 1981, the Arizona Department of Health Services discovered solvent and chromium contamination in the ground water within the PGA area. Additional sampling in 1982 and 1983 found 18 wells contaminated with TCE. The primary contaminants of concern include: TCE, VOCs, and chromium.

The selected interim remedial action for this site includes: ground water pump and treatment from the Subunit A aquifer of the entire Section 16 area by air stripping with reinjection of the stripped water back into the Subunit A aquifer; and Loral Corporation and PGA will continue to pump ground water from Subunit B/C and treat with granular activated carbon. The estimated present worth cost for this selected remedy is $2,358,500 with O&M of $800,200.

PERFORMANCE STANDARDS OR GOALS: Ground water treatment will meet the MCL values for TCE 5.0 ug/l, 1,1,1-trichloroethane 200.0 ug/l, 1,1-dichloroethylene 7.0 ug/l, carbon tetrachloride 5.0 ug/l, chromium 50.0 ug/l, and arsenic 50.0 ug/l. Chloroform will meet the water quality criteria value of 0.5 ug/l.

INSTITUTIONAL CONTROLS: Not applicable.

KEYWORDS: Air Stripping; ARARs; Arsenic; Carcinogenic Compounds; Chromium; Direct Contact; Drinking Water Contaminants; Granular Activated Carbon; Ground Water; Ground Water Monitoring; Ground Water Treatment; Interim Remedy; MCLs; O&M; Onsite Discharge; Public Exposure; RCRA; Safe Drinking Water Act; Solvents; State Criteria; TCE, VOCs; Water Quality Criteria.

OPERATING INDUSTRIES, CA
First Remedial Action
July 31, 1987

ROD ABSTRACT

The Operating Industries, Inc. (OII) site, consisting of a 190-acre landfill, is located in Monterey Park, California. From 1948 to 1952, the site was used to dispose of municipal garbage by the City of Monterey Park. Prior to 1948, the site and surrounding areas were quarried for sands and gravels. Between 1952 and 1984, under the private ownership of OII, the landfill received municipal and industrial liquid and sludge wastes. The construction of a freeway in 1974 split the landfill into a north and south parcel. By June 1975, waste disposal operations curtailed in the northern parcel, limiting operations to the area south of the freeway. In 1954, the Regional Water Quality Control Board permitted disposal of liquids at the site. Some of these liquids, and some liquid industrial wastes disposed prior to the Board's permit, are considered hazardous by current statutes and regulations. In 1975, a 32-acre area in the southern parcel was permitted to accept Class II-1 wastes. Waste disposal operations ceased in October 1984. In 1979, Getty Synthetic Fuels, Inc.(GSF), having established a contractual relationship with OII for the extraction of gas from the landfill, began gas processing activities (GPA). EPA took over operations of the GPA in June 1987 following a decision by GSF to abandon activities at the landfill. EPA has been conducting site control and monitoring activities at the site since May 1986. Additionally, EPA has conducted a number of emergency actions to mitigate potential threats to public health and the environment. Leachate generated at the site is a hazardous waste as defined by RCRA regulations and contains VOCs including TCE, vinyl chloride, benzene, and toluene.

The selected remedial action for this site includes site control and monitoring activities. The first control component is operation and consists of opening/closing valves, starting motors and other mechanical functions. Maintenance is the second control component and can consist of repairs to existing systems or preventative maintenance and improvements. Gas wells and leachate pumping and collection will be monitored. The estimated present worth cost for this interim remedy is $5,100,000.

PERFORMANCE STANDARDS OR GOALS: Cleanup goals will be met in the final remedial action for the CII site.

INSTITUTIONAL CONTROLS: Previously implemented site access restrictions will continue under this interim site remedy.

KEYWORDS: Air Monitoring; Benzene; Interim Remedy; O&M; Organics; TCE; Toluene; VOCs.

SAN FERNANDO AREA 1, CA
First Remedial Action
September 24, 1987

ROD ABSTRACT

The North Hollywood-Burbank Well Field (NHBWF) is one of four NPL sites in San Fernando Valley, California. It is located within the San Fernando Valley Ground Water Basin, which can provide drinking water for approximately 500,000 people residing in the San Fernando Valley and Los Angeles. The NHBWF, operated by the Los Angeles Department of Water and Power (DWP), provides drinking water to the City of Los Angeles. In 1980, TCE and PCE were discovered in 25 percent of DWP's wells. In July 1981, DWP and the Southern California Association of Governments began a two-year study funded by EPA. The study revealed the occurrence of ground water contamination plume patterns that are spreading toward the southeast. Following the completion of the study, DWP began a program to control the spread of contamination, which included preferential pumping and blending of the contaminated ground water with uncontaminated surface water supplies. The primary contaminant of concern to the ground water is TCE, with PCE and other VOCs present.

The selected remedial action for this site is ground water pump and treatment using aeration and granular activated carbon-air filtering units with discharge to the DWP Pumping Station for chlorination and distribution. Spent carbon will be removed and replaced with fresh carbon. The spent carbon will be scheduled either for disposal or regeneration. The estimated capital cost for this remedial action is $2,192,895 with present worth O&M of $2,284,105.

PERFORMANCE STANDARDS OR GOALS: The recommended chemical-specific cleanup level is the MCL for TCE 5.0 ug/l and the State Action Level for PCE 4.0 ug/l. These levels were selected because they are attainable and provide a level of public health protection equivalent to that required in all public drinking water systems.

INSTITUTIONAL CONTROLS: Not applicable.

KEYWORDS: Aeration; ARARs; Carcinogenic Compounds; Clean Air Act; Direct Contact; Drinking Water Contaminants; Granular Activated Carbon; Ground Water; Ground Water Monitoring; Ground Water Treatment; MCLs; O&M; Offsite Discharge; Onsite Treatment; PCE; Plume Management; RCRA; Safe Drinking Water Act; State Criteria; TCE; VOCs.

SAN GABRIEL AREA I, CA
First Remedial Action
September 30, 1987

ROD ABSTRACT

San Gabriel Area 1, of the San Gabriel Ground Water Basin, is located primarily underneath the City of El Monte, Los Angeles County, California. In 1980, the State of California conducted an extensive well water testing program in the San Gabriel basin and found numerous wells contaminated with TCE, PCE, and other chlorinated hydrocarbons. As a result, the California Department of Health Services (DHS) directed area public water companies to implement periodic well testing. State action levels for TCE and PCE were set at 5 and 4 ug/l (ppb), respectively. If alternative methods of reducing TCE and PCE concentrations below the action levels were not effective, wells would be removed from service. In 1983, when EPA became involved in addressing the problem, three mutual water companies, Richwood, Rurban Homes, and Hemlock, had no alternate water supply and had been providing their customers with PCE contaminated water above the DHS action level. In May 1984, a ROD was signed selecting air stripping treatment as the most cost-effective initial remedial measure to provide the three mutual water companies in El Monte with a source of uncontaminated water. During the design phase of the measure, it became apparent that the cost to construct and operate air stripping systems would be much higher than estimated in the Focused Feasibility Study and the ROD due to the severe site constraints associated with these systems. As a result, revised cost estimates have been developed for all of the ROD's alternatives. Based on these revised costs and other factors, EPA has determined that carbon adsorption treatment is now the cost-effective alternative to treat the contaminated ground water. The primary contaminants of concern are VOCs, including PCE.

The selected remedial action for this site includes: installation of an activated carbon adsorption system for treatment of well discharge at the Richwood Mutual Water Company; completion of the design and development of bid documents for the Rurban Homes system, monitoring of this system with implementation of a carbon adsorption system if monitoring results show an increase in well contaminant levels; and, if necessary, upgrading the Hemlock system. The estimated capital cost for this remedial action is $1,616,100-$1,771,800 with annual O&M of $181,400-$303,100.

PERFORMANCE STANDARDS OR GOALS: No MCL exists yet for PCE. The standard detection unit for PCE analyzed in conformance with EPA Method 601 for purgable halocarbons is 1.0 ug/l. The recommended alternative will reduce PCE levels to below this detection limit.

INSTITUTIONAL CONTROLS: Not applicable.

KEYWORDS: ARARs; Carcinogenic Compounds; Direct Contact; Drinking Water Contaminants; Ground Water; Ground Water Monitoring; Ground Water Treatment; O&M; PCE; Publicaly-Owned Treatment Works; State Criteria; VOCs.

STRINGFELLOW ACID PITS, CA
Second Remedial Action
June 25, 1987

ROD ABSTRACT

The Stringfellow site is located in Riverside County, California, approximately one mile north of the community of Glen Avon. Between August 1956 and November 1972, the Stringfellow Quarry Company operated a hazardous waste disposal facility at the site. Approximately 34,000,000 gallons of industrial waste, primarily from metal finishing, electroplating, and DDT production were deposited in onsite evaporation ponds. Spray evaporation procedures were used to accelerate volume reduction of pond contents. In 1972, the site was voluntarily closed. In 1969 and 1978, excessive rainfall caused the disposal ponds to overflow into Glen Avon. In 1980 and 1981, the Santa Ana Regional Water Quality Control Board (RWQCB) implemented an Interim Abatement Program at the site, as the first phase of site closure. The program included removal of all surface liquids, partial neutralization and capping of wastes, installation of a gravel drain and an onsite downgradient well network, surface water diversion channels, and construction of a downgradient clay core barrier dam and leachate collection system. A July 1984 Record of Decision approved the installation of an onsite ground water facility using lime precipitation for heavy metals followed by granular activated carbon treatment for the removal of organics, with initial discharge to POTW and final discharge to the ocean. The primary contaminants of concern affecting onsite and downgradient ground water include: VOCs, TCE, organics, inorganics, and metals.

The selected remedial action for this site includes: installation of a ground water barrier system in the lower canyon area and treatment of extracted ground water, if necessary, followed by discharge to a POTW; installation of a peripheral channel around the north end of the original site to direct upgradient surface water runoff; and extension of the existing gunite channels southward to discharge surface water to Pyrite Creek. The estimated capital cost for the selected remedy is $1,047,000-$1,136,000 with annual O&M of $1,243,000-$1,408,000.

PERFORMANCE STANDARDS OR GOALS: The Santa Ana Watershed Project Authority (SAWPA) permit water quality limitations for discharge to the SARI sewer line include: arsenic 2.0 mg/l; cadmium 0.064 mg/l; chromium 2.0 mg/l; lead 0.58 mg/l; total toxic organics (excluding PCBs and pesticides) 0.58 mg/l; and PCBs and pesticides 0.02 mg/l.

INSTITUTIONAL CONTROLS: Not applicable.

KEYWORDS: ARARs; Carcinogenic Compounds; Chromium; Clean Water Act; Direct Contact; Ground Water; Ground Water Treatment; Inorganics; Interim Remedy; Lead; Metals; O&M; Offsite Discharge; Onsite Treatment; Organics; Pesticides; Publicly-Owned Treatment Works; RCRA; State Criteria; Surface Water Diversion; TCE; VOCs.

COLBERT LANDFILL, WA
First Remedial Action - Final
September 29, 1987

ROD ABSTRACT

The Colbert Landfill, a 40-acre, county-owned, sanitary landfill, is located in Spokane County, Washington. From 1968 through 1986, the landfill received both municipal and commercial wastes. From 1975 to 1980, a local electronics manufacturing company, Key Tronic Corporation, disposed of several hundred gallons per month of spent organic solvents, mainly methylene chloride and 1,1,1-trichloroethane (TCA) at the landfill. These wastes were typically brought to the landfill in drums and poured down the sides of open trenches to mix with the soil or ordinary municipal refuse already in the trench. During the same period Fairchild Air Force Base disposed of various solvent wastes at the site. Pesticides and refinery tar residues were also disposed onsite, but to date, these contaminants have not been detected in the ground water. In 1980, nearby residents complained to the Eastern Regional Office of the Washington Department of Ecology about these disposal practices. Investigation of these complaints led to the discovery of nearby private well contamination with TCA. In June 1984, an Initial Remedial Measure (IRM) was developed to extend the public water supply mains to affected residents. The primary contaminants of concern affecting the ground water are VOCs (TCA, 1,1-dichloroethylene, 1,1-dichloroethane, TCE, methylchloride).

The selected remedial action for this site includes: installation and operation of interception and extraction wells; onsite ground water treatment; and implementation of an alternate water supply. The estimated present worth cost for this remedial action is $24,000,000 with no O&M specified.

PERFORMANCE STANDARDS OR GOALS: Ground water treatment will reduce contaminant levels to MCL values or less, or to within the 10^{-6} cancer risk level value. Specific goals include: TCA 200.0 ug/l; 1,1-dichloroethylene 7.0 ug/l; 1,1-dichloroethane 4,050.0 ug/l; TCE 5.0 ug/l; tetrachloroethylene 0.7 ug/l; and methylene chloride 2.5 ug/l.

INSTITUTIONAL CONTROLS: Not applicable.

KEYWORDS: Alternate Water Supply; ARARs; Carcinogenic Compounds; Clean Water Act; Drinking Water Contaminants; Ground Water; Ground Water Monitoring; Ground Water Treatment; O&M; Onsite Treatment; PCE; Safe Drinking Water Act; State Criteria; TCE; VOCs.

SECTION III

RECORDS OF DECISION SUMMARY TABLE

FY 1987

The FY 1987 Record of Decision (ROD) Summary Table provides an overview of site problems, selected remedies, cleanup criteria and estimated costs provided in the RODs signed during FY 1987. The table is presented by Region, in alphabetical order according to the site name.

FY 1987 RECORD OF DECISION (ROD) SUMMARY TABLE

Region	Site Name, State/ Type	Signature Date	Oper- able Unit	Threat/Problem	Estimated Waste Volume	Components of Selected Remedy	Standards/Goals	Estimated Capital/O&M Costs
01	Davis Liquid Waste, RI	09/29/87	1st	Soil and GW contaminated with VOCs, inorganics, and organics	25,000 yd^3	Excavation and onsite incineration of raw wastes and contaminated soils with backfilling of treated soils not EP toxic; onsite disposal of EP toxic treated soils in RCRA landfill; GW pump and treatment using air stripping and carbon adsorption with reinjection; and provision of an alternate water supply for nearby residences	Soils will be treated to attain 10^{-5} cancer risk level with concentrations of total VOCs reduced to <2 mg/kg. GW will be treated to attain the 10^{-5} cancer risk level which includes reducing concentrations of benzene and TCE to 5.0 ug/l (MCLs) each	$27,392,000 (present worth)
01	Ottati & Goss, NH	01/16/87	1st-Final	Soil, sediments, and GW contaminated with VOCs including TCE, organics including PCBs, and inorganics	19,000 yd^3	Onsite incineration of 5,000 yd^3 soil and sediments with < 20 mg/kg PCBs; aeration of 14,000 yd^3 of soils >20 mg/kg PCBs and >1 mg/kg total VOCs; GW pump and treatment using air stripping, biological treatment, and ion-exchange with reinjection; and onsite backfilling of all residuals with grading and covering	Soil, sediments, and GW will attain the health-based cleanup level of 10^{-5}. Specific GW goals include 1,2-DCE 3.8 ug/l, TCE 26.0 ug/l, PCE 6.7 ug/l, and benzene 13.0 ug/l. Specific soil and sediment goals include PCBs 20.0 mg/kg and total VOCs 1.0 mg/kg	$8,592,500 (capital) $1,735,000 (annual O&M)
01	Re-Solve, MA	09/24/87	2nd-Final	Soil, sediments, and GW contaminated with VOCs, and organics including PCBs	25,500 yd^3	Excavation with KPEG dechlorination and onsite placement of 22,500 yd^3 of soil and 3000 yd^3 of sediments; GW pump and treatment using air stripping and carbon adsorption with reinjection; and institutional controls restricting GW usage	Soils will be treated to PCBs 25.0 mg/kg based on the 10^{-5} cancer risk level. Sediments will be treated to PCBs 1.0 mg/kg. GW will be treated to the 10^{-5} cancer risk which includes MCL values for TCE, PCE, and methylene chloride of 5.0 ug/l each	$7,332,900 (capital) $1,097,000 (present worth O&M)

FY 1987 RECORD OF DECISION (ROD) SUMMARY TABLE

Region	Site Name, State/ Type	Signature Date	Oper- able Unit	Threat/Problem	Estimated Waste Volume	Components of Selected Remedy	Standards/Goals	Estimated Capital/O&M Costs
02	Chemical Control, NJ	09/23/87	2nd	Soil contaminated with VOCs, organics, inorganics, and pesticides	18,000 yd^3	In-situ fixation of 18,000 yd^3 of soil; repairing berm to prevent surface runoff into adjacent river; removal of debris; and sealing of a sanitary sewer	Cleanup goals for contaminants in the soil were not specified	$7,208,000 (capital) $57,400 (annual O&M years 1-5) $22,400 (annual O&M years 6-30)
02	Cooper Road, NJ	09/30/87	1st-Final	None	Not applicable	No further action	Not provided	$0
02	Diamond Alkali, NJ	09/30/87	1st	Soil, debris, GW, and air contaminated with pesticides including TCDD and DDT	Not provided	Construction of site slurry wall and flood wall; disassembly and decontamination of structures and materials for offsite reuse, recycling, or disposal; offsite transportation of all drums containing hazardous substances >1 ug/kg TCDD for treatment or disposal; securing of all material with >1 ug/kg TCDD onsite; stabilization of remaining drums with dioxin-contaminated materials; GW pump and treatment; plugging or rerouting underground conduits; and onsite placement and capping of sludge	Cleanup levels will attain 10^{-6} cancer risk level. GW will be treated to include dioxin 1.4×10^{-5} ug/l, DDT 2.4×10^{-2} ug/l, and hexachlorobenzene 7.4×10^{-1} ug/l. Soil and structures will be treated to dioxin 1.0 ug/l	$8,068,000 (capital) $261,000 (annual O&M)

FY 1987 RECORD OF DECISION (ROD) SUMMARY TABLE

Region	Site Name, State/ Type	Signature Date	Oper- able Unit	Threat/Problem	Estimated Waste Volume	Components of Selected Remedy	Standards/Goals	Estimated Capital/O&M Costs
02	Endicott Village Well Field, NY	09/25/87	1st	GW contaminated with VOCs	3,700 gpm (to be treated)	GW treatment with air stripping and chlorination; and continued operation of an existing purge well to intercept contamination on its way to the supply well	GW treatment will attain MCL values which include vinyl chloride 2 ug/l, 1,2-dichloroethane 5 ug/l, and trichloroethane 5 ug/l. Tetrachloroethene 0.88 ug/l and 1,1,2-trichloroethane 0.6 ug/l will meet levels established by the FWQC, and will meet the 10^{-6} cancer risk level. Vinyl chloride air emission will meet the National Emission Standard for Clean Air of 10 ppm	$1,200,000 (capital) $147,000 (annual O&M)
02	GE Moreau, NY	07/13/87	1st	Soil, SW, and GW contaminated with VOCs including TCE, and organics including PCBs	8,600 yd^3	Excavation of soil with disposal under cap; slurry wall installation (completed); SW and GW treatment with air stripping; and extension of municipal water supply to affected residents	Soil cleanup goals were not specified. GW and SW treatment will attain the MCL for TCE 5.0 ug/l and the State guidance value for 1,2-DCE 50.0 ug/l	$16,382,000 (capital) $78,000 (annual O&M)
02	Haviland Complex, NY	09/30/87	1st- Final	Sediments and GW contaminated with VOCs and metals	Not provided	GW pump and treatment with air stripping; provision of an alternate water supply; and excavation of contaminated sediments from local septic disposal systems	Specific treatment goals will be determined during pilot studies	$1,257,500 (capital) $105,500 (annual O&M)
02	Katonah Municipal Well, NY	09/25/87	1st- Final	GW contaminated with VOCs including PCE	Not provided	Installation of a new GW production well and onsite treatment with air stripping prior to discharge to POTW	The cleanup goal for PCE is less than 1.0 ug/l or nondetectable and is based on 10^{-6} cancer risk level	$1,365,000 (capital) $296,000 (annual O&M)

FY 1987 RECORD OF DECISION (ROD) SUMMARY TABLE

Region	Site Name, State/ Type	Signature Date	Oper- able Unit	Threat/Problem	Estimated Waste Volume	Components of Selected Remedy	Standards/Goals	Estimated Capital/O&M Costs
02	Montgomery Township, NJ	09/29/87	1st	GW contaminated with VOCs including TCE	Not provided	Extension of Elizabethtown water supply system to affected residences	Water supply will be monitored regularly for compliance with MCLs	$319,000 (capital) $0 (O&M)
02	Renora, Inc., NJ	09/29/87	1st	Soil and GW contaminated with VOCs, organics including PCBs and PAHs, inorganics, and pesticides	5,500 yd^3	Biodegradation of 4,400 yd^3 of PAH contaminated soil; excavation of 1,100 yd^3 of PCB contaminated soil with offsite disposal (landfilling or incineration); and backfilling, grading, and revegetation	Soil will be treated to total VOCs 1.0 mg/kg, total PAHs 10.0 mg/kg, total petroleum hydrocarbons 100.0 mg/kg, cadmium 3.0 mg/kg, zinc 350.0 mg/kg, and PCBs 5.0 mg/kg. GW will be treated to total VOCs 50.0 ug/l, arsenic 50.0 ug/l, cadmium 10.0 ug/l, chromium 50.0 ug/l, and lead 50.0 ug/l	$1,401,000 (landfilling) (present worth) or $6,021,000 (incineration) (present worth)
02	South Brunswick Landfill, NJ	09/30/87	1st- Final	GW and SW contaminated with VOCs and metals	Not provided	Remediation completed in 1985 (capping, slurry wall, and leachate collection system). Post-remediation monitoring will continue for 30 years	Chemical-specific levels will be addressed in the post-remedial monitoring program	$0 (no additional funding necessary)
02	Suffern Village Well Field, NY	09/25/87	1st- Final	Potential contamination of GW with VOCs	Not applicable	No further action with GW monitoring	GW levels for 1,1,1-TCA comply with the NYSDEC guideline of 50.0 ug/l	$0 (capital) $311,000 (present worth) O&M)

FY 1987 RECORD OF DECISION (ROD) SUMMARY TABLE

Region	Site Name, State/ Type	Signature Date	Oper-able Unit	Threat/Problem	Estimated Waste Volume	Components of Selected Remedy	Standards/Goals	Estimated Capital/O&M Costs
02	Vega Alta, PR	09/29/87	1st	GW contaminated with VOCs including TCE and PCE	3,800,000 gpd (supply)	GW pump and treatment using scaling pre-treatment, air stripping, and possibly activated carbon with discharge to creek or public distribution system; and the shutting down of 2 wells with connection to the public distribution system	GW treatment will attain the 10^{-6} health-based risk level which will includes MCL values for PCE 0.7 ug/l, 1,1-dichloroethene 0.23 ug/l, benzene 0.7 ug/l, and trichloroethene 2.8 ug/l. The ultimate attainment of MCLs will require identification and control of source(s)	$4,106,000 (capital) $581,000 (annual O&M)
02	Volney Landfill, NY	07/31/87	1st	GW contaminated with VOCs and metals	4,000,000 yd^3	Supplemental capping of landfill side slopes covering approximately 35 acres; installation of a leachate collection system to include a slurry wall, collection wells, and force mains; and offsite or onsite treatment of contaminated leachate which will be determined during design (flow equalization, batch biological treatment, and carbon absorption considered)	Cleanup goals will meet the MCL values for vinyl chloride 1.0 ug/l, benzene 5.0 ug/l, and arsenic 50.0 ug/l. Additionally, chloroform 0.0 ug/l, nickel 15.4 ug/l, and arsenic 0.0 ug/l will meet WQC values. Total phenols 1.0 ug/l will meet the NY State value	$12,754,000 - (offsite leachate treatment) (capital) $12,876,000 (onsite leachate treatment) (capital cost) $882,000 (offsite leachate treatment) (present worth O&M) $691,000 (onsite leachate treatment) (present worth O&M)

FY 1987 RECORD OF DECISION (ROD) SUMMARY TABLE

Region	Site Name, State/ Type	Signature Date	Oper- able Unit	Threat/Problem	Estimated Waste Volume	Components of Selected Remedy	Standards/Goals	Estimated Capital/O&M Costs
02	Waldick Aerospace, NJ	09/29/87	1st	Soil contaminated with VOCs including TCE, and inorganics	10,500 yd^3	In-situ air stripping of 8,000 yd^3 from the saturated zone; excavation and offsite disposal of 2,500 yd^3 residuals with contamination above action levels; institutional controls to include site access and well restrictions; and fencing	Soils will be excavated to New Jersey Department of Environmental Protection levels which include cadmium 3.0 mg/kg, chromium 100.0 mg/kg, zinc 350.0 mg/kg, nickel 100.0 mg/kg, total VOCs 1.0 mg/kg, and total PHCs 100.0 mg/kg	$2,602,118 (capital) $55,000 (annual O&M)
02	Williams Property, NJ	09/29/87	1st-Final	Soil and GW contaminated with VOCs including PCE, organics, and metals	700 yd^3	Excavation of soil with removal to an offsite disposal facility for incineration; regrading, revegetation, and site restoration; GW pump and treatment using air stripping and carbon adsorption with reinjection; and provision of an alternate water supply to affected residences	Soil will be excavated to the New Jersey Environmental Cleanup Responsibility Act (ECRA) target level of 1.0 mg/kg total VOCs. GW will be treated to MCLs which include TCE 5.0 ug/l, chloroform 100.0 ug/l, barium 1,000.0 ug/l, arsenic 50.0 ug/l, cadmium 10.0 ug/l, chromium 50.0 ug/l, and lead 50.0 ug/l	$513,750 (capital) $64,600 (annual O&M)
03	Kane and Lombard, MD	09/30/87	1st	Soil, GW, and debris contaminated with VOCs, organics including PAHs and PCBs, and metals	67,000 yd^3	Removal of drums, hot spots, and 67,000 yd^3 soil with onsite soil capping; construction of subsurface containment/diversion system; development of SW run-off management facility; and future use institutional controls	Chemical-specific cleanup levels will be addressed in 2nd O.U.	$4,692,660 (capital) $28,930 (annual O&M)

FY 1987 RECORD OF DECISION (ROD) SUMMARY TABLE

Region	Site Name, State/ Type	Signature Date	Oper- able Unit	Threat/Problem	Estimated Waste Volume	Components of Selected Remedy	Standards/Goals	Estimated Capital/O&M Costs
03	Palmerton Zinc, PA	09/04/87	1st	Defoliation of mountain side from zinc, lead, cadmium, and sulfur dioxide	Not provided	Onsite installation of concrete pad with berms to mix offsite sewage sludge and fly ash; application of lime (10 tons/acre) and potash (80 lbs/acre) on target areas; application of fly ash and offsite sludge on target areas; and application of grass seed, seedlings, and mulch	State loading rates for metals include cadmium 3.0 lbs/acre, copper 100.0 lbs/acre, chromium 100.0 lbs/acre, lead 100.0 lbs/acre, mercury 0.3 lbs/acre, nickel 20.0 lbs/acre, and zinc 200.0 lbs/acre. The maximum dry sludge application rate is 60 tons/acre	"Minimal" to none
03	Presque Isle, PA	09/30/87	1st-Final	None	Not applicable	No further action	Not provided	$0
03	Saltville Waste Disposal Ponds, VA	06/30/87	1st	Soil, sediments, SW, air, and biota contaminated with mercury	Not provided	Upgrading runon controls; treatment of waste pond outfall with either sulfide precipitation or carbon adsorption; and institutional controls to include possible implementation of local zoning ordinances	Treatment discharge into river will meet the State standard for mercury 0.05 ug/l in water	$840,052-$2,143,052 (capital) $221,941-$258,941 (sulfide ppt. or carbon system, respectively) (annual O&M)

FY 1987 RECORD OF DECISION (ROD) SUMMARY TABLE

Region	Site Name, State/ Type	Signature Date	Oper-able Unit	Threat/Problem	Estimated Waste Volume	Components of Selected Remedy	Standards/Goals	Estimated Capital/O&M Costs
03	West Virginia Ordnance Works, WV	03/27/87	1st	Soil, sediments, and SW line contaminated with organics and asbestos	4,305 yd^3	In-situ flaming treatment of reactive nitroaromatic residue; capping of treatment residuals with nitroaromatic concentrations >50 mg/kg; excavation, flushing, and backfilling of reactive sewer lines; offsite disposal of asbestos; and institutional controls to include deed restrictions	Soil cleanup will attain less than the 10^{-6} individual lifetime cancer risk level. This sets the cleanup goal of total nitroaromatics at 50.0 mg/kg	$1,807,000 (capital) O&M not provided
04	Geiger (C&M Oil), SC	06/01/87	1st	Soil and GW contaminated with VOCs, organics including PCBs, and metals	11,300 yd^3 62,000,000 gal	Excavation and onsite thermal treatment of soil followed by solidification/stabilization with backfilling of excavated areas using grading and covering; and GW pump and treatment with discharge to SW	Specific preliminary goals for soil based on MCLs to include lead 166.5 mg/kg, chromium 3.7 mg/kg, benzene 14.4 mg/kg, trans-1,2-dichloroethylene 76.0 ug/kg, toluene 971.0 ug/kg, and PCB (Aroclor 1254) 1,050 ug/kg. GW will attain the cumulative 10^{-5} cancer risk level which includes MCL values for benzene 5.0 ug/l, toluene 175.0 ug/l, and lead 50.0 ug/l	$5,583,000 (capital) $367,200 (present worth O&M)

FY 1987 RECORD OF DECISION (ROD) SUMMARY TABLE

Region	Site Name, State/ Type	Signature Date	Oper-able Unit	Threat/Problem	Estimated Waste Volume	Components of Selected Remedy	Standards/Goals	Estimated Capital/O&M Costs
04	Gold Coast, FL	09/11/87	1st-Final	Soil and GW contaminated with VOCs including TCE and PCE, and metals	1,500 yd^3 100,000 gal	Stabilization/solidification of 1,000 yd^3 metal contaminated soil with onsite disposal and capping; excavation of 500 yd^3 soil and sludges with offsite disposal at a RCRA facility; GW pump and treatment (to be identified during design) with offsite discharge; and well closure	Soils will be excavated to the 10^{-4} health-based risk level which includes lead 100.0 mg/kg. GW treatment will attain MCLs for VOC contamination which include 1,1-dichloroethane 5.0 ug/l, methylene chloride 5.0 ug/l, trans-1,2-dichloroethylene 70.0 ug/l, tetrachloroethylene 3.0 ug/l, toluene 340.0 ug/l, and trichloroethylene 3.0 ug/l	$3,711,660 (capital)
04	Independent Nail, SC	09/28/87	1st	Soil and sediments contaminated with metals	6,200 yd^3	Excavation of metal contaminated soil and lagoon sediments with solidification/stabilization; backfilling of treated soil; and covering	Soil will attain a 10^{-6} or less, cancer risk level which includes cadmium 2.6 mg/kg, chromium 5.3 mg/kg, cyanide 0.02 mg/kg, nickel 18.0 mg/kg, and zinc 1,785.0 mg/kg	$1,032,000 (capital) $22,500 (annual O&M years 1-2) $5,600 (annual O&M years 3-30)
04	Newport Dump, KY	03/27/87	1st	Soil and GW contaminated with organics including PCBs and PAHs, and metals	1,000,000 yd^3	Implementation of multimedia monitoring program; restoration and extension of leachate collection system; and restoration, regrading, and bank stabilization of existing clay cap with revegetation	PCBs, nickel, toluene, and other organics will be treated to the 10^{-6} health-based risk level. Barium and chromium will attain the MCL values of 1,000.0 ug/l and 50.0 ug/l, respectively	$516,000 (capital) $63,000 (annual O&M years 1-2) $35,000 (annual O&M years 3-30)

FY 1987 RECORD OF DECISION (ROD) SUMMARY TABLE

Region	Site Name, State/ Type	Signature Date	Oper- able Unit	Threat/Problem	Estimated Waste Volume	Components of Selected Remedy	Standards/Goals	Estimated Capital/O&M Costs
04	N.W. 58th Street Landfill, FL	09/21/87	3rd- Final	GW contaminated with VOCs including TCE and PCE, and metals	27,000,000 yd^3	Landfill closure for all contaminated soil; controlling leachate generation through grading, drainage control, and capping; and provision of an alternate water supply to private well users east of landfill	The GW remedial action, as required in the 1985 ROD, will provide air stripping to bring contaminants into compliance with MCLs	$5,500,000 (capital) $1,500,000 (annual O&M)
04	Palmetto Wood Preserving, SC	09/30/87	1st- Final	Soil and GW contaminated with metals	19,895 yd^3 10,500,000 gal	Excavation of contaminated soil with onsite flushing and backfilling of treated soil; pumping of wastewater to onsite treatment facility; GW pump and treatment with offsite discharge to SW; and installation of municipal waterline to affected residents or the drilling of new wells	Soil cleanup will attain public health evaluation levels which include chromium 627.0 mg/kg and arsenic 200.0 mg/kg. GW will attain MCL values which include chromium 50.0 ug/l, copper 1,000.0 ug/l, and arsenic 50.0 ug/l	$1,393,000 (capital) $176,163 (annual O&M)
04	Parramore Surplus, FL	09/15/87	1st- Final	Possible contamination of GW with metals	Not applicable	No further action with monitoring of GW and SW	Cleanup standards to be reviewed as part of GW quality assessment include MCLs and WQC	$21,000 (capital) $19,000 (annual O&M)

FY 1987 RECORD OF DECISION (ROD) SUMMARY TABLE

Region	Site Name, State/ Type	Signature Date	Oper- able Unit	Threat/Problem	Estimated Waste Volume	Components of Selected Remedy	Standards/Goals	Estimated Capital/O&M Costs
04	Powersville Landfill, GA	09/30/87	1st-Final	Soil and GW contaminated with VOCs, organics, pesticides, and metals	Not provided	Capping with grading; installation of monitoring wells and gas vents; provision for alternate water supply (extension of existing municipal water supply); and institutional controls including deed restrictions to restrict drilling or construction activities	Current contaminant concentration levels do not exceed SDWA	$4,000,000 (capital) $577,013 (present worth O&M)
04	Sodyeco, NC	09/24/87	1st-Final	Soil, SW, and GW contaminated with VOCs including TCE, and organics including PAHs	150 yd^3 (area D soil)	Excavation and incineration of 150 yd^3 of contaminated soil in area D and backfilling with clean soil; onsite treatment of contaminated soil in area C which may include flushing, soil washing, thermal processing, or in-situ steam stripping; capping of area 3 with asphalt; and GW pump and treatment with off-discharge to SW	Soil treatment will attain all ARARs following GW remediation. GW cleanup goals are based on MCLs, AWQC, MCLGs, NAAQ, and public health evaluation levels which include TCE 2.7 ug/l, PCE 0.8 ug/l, toluene 2,000.0 ug/l, xylene 440.0 ug/l, total PAHs 2.8 ng/l, chlorobenzene 60.0 ug/l, 1,2-DCE 400.0 ug/l, and ethylbenzene 680.0 ug/l	$2,089,000 - $3,865,000 (present worth)

FY 1987 RECORD OF DECISION (ROD) SUMMARY TABLE

Region	Site Name, State/ Type	Signature Date	Oper- able Unit	Threat/Problem	Estimated Waste Volume	Components of Selected Remedy	Standards/Goals	Estimated Capital/O&M Costs
04	Tower Chemical, FL	07/09/87	1st	Soil and GW contaminated with pesticides and metals	4,000 yd^3 (soil) 100,000,000 gal (GW)	Excavation and onsite thermal treatment of 4,000 yd^3 soils and any contaminated drum contents found; decontamination of debris; residual analysis (if non-hazardous, backfill treated soil and debris onsite); GW pump and onsite treatment using filtration and activated carbon with offsite discharge to SW; installation of 2 individual treatment units for private wells; and institutional controls to include access restrictions	Soil cleanup goals will attain a 10^{-6} health-based risk level which includes copper 100.0 mg/kg, lead 100.0 mg/kg, arsenic 5.0 mg/kg, and DDT 35.0 mg/kg. GW treatment will attain Florida Administrative Code levels, drinking water health advisory levels, 10^{-6} health based levels and alternate concentration levels (based on 10^{-6} risk level) which include arsenic 0.05 ug/l, nickel 350.0 ug/l, chromium 0.05 ug/l, alpha-BHC 0.05 ug/l, chloroform 5.0 ug/l, DDT 0.01 ug/l, chlorobenzilate 1.0 ug/l, and dicotol 1.0 ug/l	$6,788,000 (capital) $0 (O&M)
04	Tri-City Oil, FL	09/21/87	1st- Final	None	Not applicable	No further action	Contaminant concentration levels are below analytical detection limits	$0
05	Envirochem, IN	09/25/87	1st	Soil, sediments, SW, and GW contaminated with VOCs, organics including PCBs, and inorganics	4,200 yd^3	Excavation, dewatering and onsite disposal of soils and sediments under a RCRA multi-layer cap; re-routing of SW; GW collection and treatment; and institutional controls to include deed and access restrictions	GW will attain MCL values which include benzene 5.0 ug/l, 1,1-DCE 7.0 ug/l, arsenic 50.0 ug/l, lead 50.0 ug/l, and TCE 200.0 ug/l	$33,900,000 (present worth)

FY 1987 RECORD OF DECISION (ROD) SUMMARY TABLE

Region	Site Name, State/ Type	Signature Date	Oper- able Unit	Threat/Problem	Estimated Waste Volume	Components of Selected Remedy	Standards/Goals	Estimated Capital/O&M Costs
05	FMC, MN	09/30/87	1st-Final	GW contaminated with VOCs including TCE	Not provided	GW extraction with discharge of untreated GW to POTW; and institutional controls to include land use restrictions to mitigate against near-term contaminated GW usage	GW treatment will attain a 10^{-6} heath-based risk level and meet the MCLs for 1,2-DCA 5.0 ug/l, 1,1,1-TCA 200 ug/l, TCE 5.0 ug/l, PCE 10.0 ug/l, 1, 1-dichloroethylene 7.0 ug/l, and benzene 5.0 ug/l. Minnesota Recommended Drinking Water Limits will be met for 1,1,2-TCA 6.1 ug/l, 1,2-DCE 7.0 ug/l, toluene 2,000.0 ug/l, and xylene 440.0 ug/l	$1,518,005 (present worth)
05	Industrial Excess Landfill, OH	09/30/87	1st	GW contaminated with VOCs, organics, and inorganics	Not provided	Provision of an alternate water supply to approximately 100 homes	Chemical-specific cleanup goals will be selected in 2nd O.U.	$1,715,870-$2,289,060 (present worth)
05	Johns-Manville, IL	06/30/87	1st-Final	Soil, SW, GW, and air contaminated with inorganics including asbestos	Not provided	Grading and covering waste materials and soil in inactive water disposal areas; closure of asbestos pit cover; offsite disposal of asbestos-containing material generated from reconstruction activities following final closure of disposal pit in FY89; and SW, GW, and air monitoring system	All media will attain NESHAP requirements for asbestos	$4,026,000 (capital) $49,000 (annual O&M)

FY 1987 RECORD OF DECISION (ROD) SUMMARY TABLE

Region	Site Name, State/ Type	Signature Date	Oper-able Unit	Threat/Problem	Estimated Waste Volume	Components of Selected Remedy	Standards/Goals	Estimated Capital/O&M Costs
05	Laskin/Poplar, OH	09/30/87	2nd	Soil, oil waste water, and sludge contaminated with VOCs, organics including PCBs and PAHs, and inorganics	900,000 yd^3 771,000 gal	Onsite incineration of oils, sludges, and soils with offsite disposal of all incinerator ash; offsite treatment of waste water; decontamination of water and scrubber water; dismantling and offsite disposal of all tanks; crushing and incineration of pit cinder block walls; and backfilling and/or grading of all excavated areas	Selection of cleanup levels are scheduled in FY88	$8,490,865 (capital) $0 (O&M)
05	Liquid Disposal, MI	09/30/87	1st-Final	Soil and GW contaminated with VOCs, organics including PCBs, and inorganics	Not provided	Onsite land disposal of all debris and equipment; onsite solidification/fixation of soil and waste; construction of a slurry wall and impermeable cap containment system; and GW pump and treatment using air stripping and ion exchange with discharge to SW	Target cleanup levels (TCLs) for soil and GW will be based on 10^{-6} health-based risk level. For noncarcinogens in GW, MCLs and health-based levels were used as TCLs which include barium 1000.0 ug/l, cadmium 10.0 ug/l, chloroform 0.1 ug/l, benzene 0.2 ug/l, methylene chloride, 1.0 ug/l, and TCE 0.8 ug/l. TCL soil cleanup goals include TCE 77.0 ug/g, PCE 16.0 ug/g, benzo(a)pyrene 0.4 ug/g, PCBs 1.0 ug/g, and lead 20.0 ug/g	$21,743,100 (capital) $316,600 (present worth O&M)

FY 1987 RECORD OF DECISION (ROD) SUMMARY TABLE

Region	Site Name, State/ Type	Signature Date	Operable Unit	Threat/Problem	Estimated Waste Volume	Components of Selected Remedy	Standards/Goals	Estimated Capital/O&M Costs
05	Marion-Bragg Landfill, IN	09/30/87	1st-Final	Soil, SW, and GW contaminated with VOCs, organics including PAHs, and inorganics	1,100,000 yd^3	Regrading and capping of site; provision for maintaining flood control measures; construction and maintenance of perimeter fence; provision of three private use drinking water wells; and additional GW studies, as necessary	Selection of appropriate GW cleanup levels deferred until selection of GW treatment O.U.	$5,800,000 (capital) $1,000,000 (present worth O&M)
05	New Brighton/ Arden Hills/ St. Anthony, MN	03/31/87	5th	GW contaminated with VOCs including TCE and PCE	Not provided	Construction of granular activated carbon (GAC) water treatment facilities with discharge to the municipal water treatment plant; and construction of a pipeline from wells to the treatment facilities	GW treatment will attain the MCL for TCE of 5.0 ug/l. MCLs for other VOCs have not been exceeded	$1,100,500 (capital) $160,770 (annual O&M)
05	New Brighton (TCAAP), MN	09/25/87	3rd	GW contaminated with VOCs and metals	Not provided	GW pump and treatment with air stripping and onsite reinjection to aquifer	GW cleanup goals will attain 10^{-6} health based levels. Discharged water will, at a minimum, meet MCL values which include benzene 5.0 ug/l, toluene 2,000.0 ug/l, TCE 5.0 ug/l, PCE 6.9 ug/l, vinyl chloride 2.0 ug/l, xylene 440.0 ug/l, arsenic 50.0 ug/l, and chromium 50.0 ug/l	$4,000,000 (capital) $120,000 (annual O&M)

FY 1987 RECORD OF DECISION (ROD) SUMMARY TABLE

Region	Site Name, State/ Type	Signature Date	Oper- able Unit	Threat/Problem	Estimated Waste Volume	Components of Selected Remedy	Standards/Goals	Estimated Capital/O&M Costs
05	Northern Engraving, WI	09/29/87	1st-Final	Soil, sludge, and GW contaminated with VOCs including TCE, and inorganics	4,400 yd^3	Excavation and onsite solidification of of sludge and soil; installation of RCRA cap atop lagoon; and institutional controls to include deed and access restrictions to seepage pit	GW cleanup will be managed through the use of ACLs that are protective of the river. ACLs include TCE 21,900.0 ug/l, copper 12.0 ug/l, nickel 160.0 ug/l, and zinc 110.0 ug/l	$295,000 (capital) $16,000 (annual O&M)
05	Northside Landfill, IN	09/25/87	1st	Soil, sediments, SW, and GW contaminated with VOCs including TCE, organics including PCBs, and inorganics	4,200 yd^3	Excavation, dewatering, and onsite disposal of soils and sediments under a RCRA multi-layer cap; re-routing of SW; GW and leachate collection and treatment system; and institutional controls to include deed and access restrictions	GW will attain MCL values which include benzene 5.0 ug/l, 1,1-DCE 7.0 ug/l, arsenic 50.0 ug/l, lead 50.0 ug/l, and TCE 200.0 ug/l	$33,900,000 (present worth)
05	Rose Township, MI	09/30/87	1st-Final	Soil and GW contaminated with VOCs, organics including PCBs and PAHs, and inorganics	50,000 yd^3	Excavation of soil and onsite thermal destruction with disposal of ash as either backfill or placement in an offsite RCRA facility (if ash is EP toxic, leachable lead removal treatment will be required); GW pump and treatment using chemical coagulation, air stripping, and activated carbon adsorption with discharge in appropriate manner; and fencing	Cumulative soil cleanup will attain 10^{-6} cancer risk level which includes arsenic 14.0 mg/kg, PCBs 10.0 mg/kg, and lead 70.0 mg/kg. GW levels will also attain the 10^{-6} cancer risk level which includes vinyl chloride 0.015 ug/l, arsenic 50.0 ug/l, lead 50.0 ug/l, chlorobenzene 60.0 ug/l (proposed MCLG), benzene 0.133 ug/l, TCE 0.627 ug/l, PCBs 0.002 ug/l, and methylene chloride 0.919 ug/l	$32,547,000 (capital) $200,000 (annual O&M years 1-10) $70,000 (annual O&M years 10-30)

FY 1987 RECORD OF DECISION (ROD) SUMMARY TABLE

Region	Site Name, State/ Type	Signature Date	Oper-able Unit	Threat/Problem	Estimated Waste Volume	Components of Selected Remedy	Standards/Goals	Estimated Capital/O&M Costs
05	Schmalz Dump, WI	09/30/87	2nd-Final	Soil contaminated with metals	Not provided	Installation of a low permeability, compacted earth material cap over approximately seven acres of soil	Chromium^{+3} does not exceed the MCL (50.0 ug/l) and lead was not reported above detection units	$687,664 (capital) $17,940 (annual O&M)
05	Seymour Recycling, IN	09/25/87	2nd-Final	Soil, sediments, and GW contaminated with VOCs including TCE, and organics	3,000 yd^3	Implementation of a full scale soil vapor extraction system; installation of a multi-media cap; excavation of contaminated sediments and consolidation of sediments beneath cap; GW pump and treatment; and institutional controls to include deed and access restrictions with compliance point at the edge of the cap	GW cleanup levels will attain a cumulative 10^{-5} to 10^{-6} cancer risk level. MCLs attributing to this level include benzene 5.0 ug/l, chloroform 100.0 ug/l, 1,2-DCE 7.0 ug/l, TCE 5.0 ug/l, and vinyl chloride 2.0 ug/l. GW cleanup levels for inorganics will meet chronic health values including lead, cadmium, and barium 50.0 ug/l each	$10,536,000 (capital) $7,200,000 (present worth O&M)
06	Bayou Bonfouca, LA	03/31/87	2nd-Final	Soil, sediments, and potentially GW contaminated with organics including PAHs	71,500 yd^3	Excavation and onsite incineration of 51,500 yd^3 of soil, sediment, and sludge with onsite disposal of ash and capping (20,000 yd^3, 34 acres); and GW pump and treatment using technologies to be evaluated during design with reinjection	Soil/sediment contamination >1,300 mg/kg PAHs will be treated. Soil/sediment contamination >100 mg/kg PAHs will be capped. GW treatment will target the 10^{-4} to 10^{-7} cancer risk level (CWA suggests 3.1 ng/l level for PAHs). Point of compliance is facility property line	$59,594,534 (capital) $173,748 (annual O&M)

FY 1987 RECORD OF DECISION (ROD) SUMMARY TABLE

Region	Site Name, State/ Type	Signature Date	Oper-able Unit	Threat/Problem	Estimated Waste Volume	Components of Selected Remedy	Standards/Goals	Estimated Capital/O&M Costs
06	Bayou Sorrel, LA	11/14/86	1st-Final	Soil and GW contaminated with pesticides, VOCs, organics, and inorganics	36,400 yd^3	Regrading with top soil; RCRA geomembrane/ clay capping of former disposal area; installation of sand/geofabric pore water drainage layer; installation of a venting system to reduce buildup of gases beneath cap; installation of slurry wall; consolidation of all miscellaneous wastes for grading fill or offsite disposal; fencing of all capped areas; and construction of gravel access roads around fenced areas	Chemical-specific cleanup levels not provided	$23,200,000 (capital) $5,700.000 (present worth O&M)
06	Cleve Reber, LA	03/31/87	1st	Soil, SW, GW, and debris contaminated with organics	6,400 drums 220,000 yd^3 500,000 gal	Excavation and onsite incineration of buried drums and sludges; RCRA capping on land used for disposal of industrial hazardous waste; installation of gas venting pipes; drainage and backfilling of onsite ponds; pond water pump and treatment with discharge to SW; and fencing	Remediation will attain the 10^{-6} cancer risk level through CWA water quality criteria. Specific cleanup goals include hexachlorobutadiene 0.45 ug/l, hexachlorobenzene 21.0 ng/l, and hexachloroethane 2.4 ug/l. Specific excavation and treatment levels not provided	$25,000,000 (capital) $100,000 (annual O&M)

FY 1987 RECORD OF DECISION (ROD) SUMMARY TABLE

Region	Site Name, State/ Type	Signature Date	Oper- able Unit	Threat/Problem	Estimated Waste Volume	Components of Selected Remedy	Standards/Goals	Estimated Capital/O&M Costs
06	Compass Industries Landfill, OK	09/29/87	1st-Final	Soil and GW contaminated with organics and inorganics	620,000 yd^3	RCRA capping with site grading; SW diversion; fencing with warning signs along cap perimeter; and GW extraction and onsite treatment in upper perched water-bearing zone	GW solid effluent levels will meet NPDES requirements. Other chemical specific levels not provided	$9,255,526 (capital) $272,830 (annual O&M))
06	Crystal City Airport, TX	09/29/87	1st-Final	Soil and debris contaminated with pesticides and inorganics	12,000 yd^3	Onsite consolidation of all materials which exceed 100 mg/kg total pesticides; RCRA capping over consolidation cell; and disposal of decontamination liquids	Soil cleanup will attain 10^{-6} health-based cancer risk level for total pesticides >100.0 mg/kg. Debris cleanup will be based on visible inspection	$1,600,000 (present worth)
06	Gurley Pit, AR	10/06/86	1st	Soil and sediments contaminated with organics including PCBs; pit sludge/ sediments contaminated with oily waste and metals	432,470 ft^3 (soil, sludge, sediments) 4,100,000 gal	Excavation and stabilization of sludge, soil, and sediment with placement in onsite RCRA landfill; removal of oil from water by oil/water separation with incineration of oil; treatment of pond water with discharge to bayou; and removal of pond water solids to be disposed with pit sludge	Remedy meets RCRA, CAA, NAAQ, and TSCA criteria for PCBs. Specific levels were not provided. Treated pond water discharges comply with NPDES permit requirements	$5,780,000 (capital) $21,000 (annual O&M)

FY 1987 RECORD OF DECISION (ROD) SUMMARY TABLE

Region	Site Name, State/ Type	Signature Date	Oper-able Unit	Threat/Problem	Estimated Waste Volume	Components of Selected Remedy	Standards/Goals	Estimated Capital/O&M Costs
06	Hardage/Criner, OK	11/14/86	1st	Soil, GW, and debris contaminated with VOCs including TCE and PCE, and organics including PCBs, and inorganics	180,000 yd^3 10,000-20,000 (drums)	RCRA capping; installation of leachate collection system; excavation of sludge, drum mounds, and main pit; temporary capping of former source areas (interim measures); onsite _or_ offsite incineration of organic liquids; onsite or offsite physiochemical treatment of inorganic liquids with discharge to POTW; and treatment of solids by technology to be identified during design. GW remediation to be addressed in future O.U.	Soil and GW cleanup levels will be addressed in 2nd O.U.	$68,014,000 (capital) $2,282,000 (present worth O&M)
06	Highland Acid Pit, TX	06/26/87	2nd-Final	Possible contamination of SW and GW with VOCs and metals	Not applicable	No further action with SW and GW monitoring	Contaminant concentration levels meet WQC and MCL requirements	$4,700. (capital) $11,120 (O&M year 1) $6,980 (annual O&M years 2-30)
06	Mid-South, AR	11/14/86	1st	Soil, sediments, SW, and GW contaminated with organics including PAHs, and inorganics	45,750 yd^3	Excavation of soil with consolidation and capping; consolidation and stabilization of oils, liquids, or sludge; RCRA capping; backfilling, grading, and seeding (or gravel cover) of all excavated areas; fencing; institutional controls to include and deed restrictions; and GW pump and treatment using carbon filtration with discharge to SW	Cleanup goals for all media are based on Public Health Evaluation levels or concentrations that exceed background levels. Specific soil goals based on the 10^{-5} health-based risk level include total PAHs 3.0 mg/kg, arsenic 5.6 mg/kg, and chromium 19.4 mg/kg	$3,500,000 (capital) $153,500 (annual O&M)

FY 1987 RECORD OF DECISION (ROD) SUMMARY TABLE

Region	Site Name, State/ Type	Signature Date	Oper- able Unit	Threat/Problem	Estimated Waste Volume	Components of Selected Remedy	Standards/Goals	Estimated Capital/O&M Costs
06	Petro-Chemical Systems, TX	03/27/87	1st	Soil contaminated with VOCs, and organics including PAHs	4,000 yd^3	Excavation and temporary storage of soil in an onsite RCRA facility; construction of a road over excavated areas and existing roadway to provide access to site area; and temporary relocation of residents during excavation	Soil will be excavated to below 100.0 mg/kg PAHs or 100.0 mg/kg total volatiles	$1,232,785 (capital) $4,750 (annual O&M)
06	Sand Springs Petrochemical Complex, OK	09/29/87	1st	Soil, surface liquids, and sludges contaminated with VOCs, organics, and inorganics	130,000 yd^3 715,000 gal	Solidification/stabilization of sludges with containment in an onsite RCRA landfill; and excavation with offsite thermal destruction of remaining sludges. Second O.U. will address GW remediation	Chemical-specific cleanup levels not provided	$37,453,050 (capital) $15,000 (annual O&M)
07	Conservation Chemical, MO	09/30/87	1st-Final	Soil and GW contaminated with VOCs, organics, pesticides, metals, and inorganics	Not provided	Capping; GW pump and treatment; and decontamination and destruction of onsite structures	Cleanup goals are based on 10^{-6} health-based risk level targets. MCL levels to be attained include arsenic 50.0 ug/l, cadmium 10.0 ug/l, total chromium 50.0 ug/l, lead 50.0 ug/l, TCE 5.0 ug/l, benzene 5.0 ug/l, vinyl chloride 2.0 ug/l, and chloroform 0.19 ug/l. AWQC cleanup levels to be met include nickel 13.9 ug/l and zinc 5,000.0 ug/l	$8,626,000 (capital) $12,774,111 (present worth O&M)

FY 1987 RECORD OF DECISION (ROD) SUMMARY TABLE

Region	Site Name, State/ Type	Signature Date	Oper- able Unit	Threat/Problem	Estimated Waste Volume	Components of Selected Remedy	Standards/Goals	Estimated Capital/O&M Costs
07	Minker Stout/ Romaine Creek, MO	09/28/87	2nd	Soil and sediments contaminated with pesticides including TCDD	4,400 yd^3	Excavation and temporary storage of soil and sediments in an onsite RCRA facility; and backfilling of excavated areas with clean soil	Soil and sediments will be excavated to below 1.0 mg/kg TCDD. Excavation will not continue beyond a depth of 4 feet or once bedrock is reached	$4,488,000 (present worth) $28,000 (annual O&M)
07	Minker Stout/ Stout, MO	09/28/87	3rd	Soil contaminated with pesticides including TCDD	3,500 - 5,700 yd^3	Excavation and temporary storage of soil in an onsite RCRA facility; backfilling of excavated areas with clean soil; and institutional controls to include site access restrictions	Soil will be excavated to below 1.0 mg/kg TCDD. Excavation will not continue beyond a depth of 4 feet or once bedrock is reached	$5,817,000-7,018,000 (present worth) $6,000 (annual O&M)
08	Central City/ Clear Creek, CO	09/30/87	1st	Possible contamination of sediments, and downstream SW and GW with inorganics	Not provided	Passive/active treatment system for acid mine drainage discharge	Interim remedy. ARARs will be determined in future O.U.	$1,663,000 (capital) $511,000 (annual O&M)
08	Denver Radium I (12th & Quivas), CO	09/29/87	4th	Soil contaminated with radium and its decay products	11,000 yd^3	Placement of cap over open 7,600 yd^3 of soil contamination; excavation of contaminated soil under several structures with temporary onsite storage (3,400 yd^3); maintenance of cap and storage area until a facility for permanent disposal becomes available; and final offsite disposal	Radium-226 in land averaged over 100 m^2 will not exceed background level by more than 5 pCi/g, averaged over the first 15 cm of soil and 15 pCi/g over 15 cm thick layers of soil. Gamma radiation in buildings not to exceed background level by 20uR/hr	$3,702,800 (capital) $290,000 (present worth O&M)

FY 1987 RECORD OF DECISION (ROD) SUMMARY TABLE

Region	Site Name, State/ Type	Signature Date	Oper-able Unit	Threat/Problem	Estimated Waste Volume	Components of Selected Remedy	Standards/Goals	Estimated Capital/O&M Costs
08	Denver Radium II (11th & Umatilla), CO	09/29/87	5th	Soil and debris contaminated with radium and its decay products	15,400 yd^3	Excavation of contaminated soil with temporary onsite storage; decontamination of 11 ft^2 of roof and placement in onsite storage facility; maintenance of existing cap and onsite land storage facility until a facility for permanent disposal becomes available (15,400 yd^3); and final offsite disposal	Radium-226 in land averaged over 100 m^2 will not exceed background level by more than 5 pCi/g, averaged over the first 15 cm of soil and 15 pCi/g over 15 cm thick layers of soil. Gamma radiation in buildings not to exceed background level by 20uR/hr	$4,230,300 (capital) $194,700 (present worth O&M)
08	Denver Radium III (1,000 West Louisiana), CO	09/30/87	6th	Soil and debris contaminated with radium and its decay products	Not provided	Onsite temporary containment of contaminated material followed by offsite permanent disposal when available; cleanup of the Creative Illumination property; and dismantling of temporary storage facility with offsite disposal; and final offsite disposal	Radium-226 in land averaged over 100 m^2 will not exceed background level averaged more than 5 pCi/g, over the first 15 cm of soil and 15 pCi/g over 15 cm thick layers of soil. Gamma radiation in buildings not to exceed background level by 20uR/hr	$2,172,800 (capital) $305,800 (present worth O&M)
08	Denver Radium/ Card Property, CO	06/30/87	3rd	Soil, sediment, and debris contaminated with radium and its decay products	4,000 yd^3	Excavation of 4,000 yd^3 soil and sediment with temporary onsite storage and final offsite disposal; and decontamination and dismantling of buildings with offsite disposal	Radium-226 in land averaged over 100 m^2 will not exceed background level by more than 5 pCi/g, averaged over the first 15 cm of soil and 15 pCi/g over 15 cmthick layers of soil. Gamma radiation in buildings not to exceed background level by 20uR/hr	$1,148,000 (capital) $89,500 (present worth O&M)

FY 1987 RECORD OF DECISION (ROD) SUMMARY TABLE

Region	Site Name, State/ Type	Signature Date	Oper- able Unit	Threat/Problem	Estimated Waste Volume	Components of Selected Remedy	Standards/Goals	Estimated Capital/O&M Costs
08	Denver Radium/ Open Space Property, CO	09/29/87	7th	Soil contaminated with radium and its decay products	1,310 yd^3	Onsite temporary containment of 290 yd^3 material followed by offsite permanent disposal; removal of 1,020 yd^3 of material with placement in containers followed by offsite disposal when available; and dismantling of temporary storage facility with offsite disposal	Radium-226 in land averaged over 100 m^2 will not exceed background level by more than 5 pCi/g, averaged over the first 15 cm of soil and 15 pCi/g over 15 cm thick layers of soil. Gamma radiation in buildings not to exceed background level by 20uR/hr	$955,400 (present worth)
08	Rocky Mountain Arsenal, CO	06/04/87	1st	GW contaminated with VOCs including TCE and PCE	Not provided	Construction of granular activated carbon (GAC) water treatment system and regeneration of spent carbon at another location; modification of GAC system, if necessary, to include air stripping facility to treat vinyl chloride; replacement of existing well pumps and motors; installation of transmission piping; and construction of laboratory and office space	Treatment will attain the MCLs which include 1,1-dichloroethylene 0.007 mg/l, TCE 0.005 mg/l, PCE 0.005 mg/l, TCA 0.200 mg/l, trans-1,2-dichloroethylene 0.005 mg/l, and vinyl chloride 0.001 mg/l	$8,869,000 or $10,100,000 (with air stripping) (capital) $372,000 (annual O&M)
09	Litchfield Airport, AZ	09/29/87	1st	GW contaminated with VOCs including TCE, and inorganics	Not provided	GW pump and treatment using air stripping and granular activated carbon with reinjection into aquifer	GW treatment will meet MCLs which include 1,1-dichloroethylene 7.0 ug/l, carbon tetrachloride 5.0 ug/l, chromium 50.0 ug/l, and arsenic 50.0 ug/l. Chloroform will meet the WQC of 5.0 ug/l	$2,358,500 (capital) $800,200 (annual O&M)

FY 1987 RECORD OF DECISION (ROD) SUMMARY TABLE

Region	Site Name, State/ Type	Signature Date	Oper-able Unit	Threat/Problem	Estimated Waste Volume	Components of Selected Remedy	Standards/Goals	Estimated Capital/O&M Costs
09	Operating Industries, CA	07/31/87	1st	Leachate contamination with VOCs including TCE	Not provided	Site control (operation and maintenance of existing systems) to include gas well probes and leachate pumping and collection	Interim Remedy. ARARs will be determined in future O.U.	$5,100,000 (present worth)
09	San Fernando Valley, CA	09/24/87	1st	Area-wide GW contaminated with VOCs including TCE and PCE	Not provided	GW pump and treatment using aeration and granular activated carbon-air filtering units with discharge to pumping station for chlorination and distribution; and disposal or regeneration of spent carbon	GW treatment will meet the MCL for TCE 5.0 ug/l and the State Action level for PCE 4.0 ug/l	$2,192,895 (capital) $2,284,105 (present worth O&M)
09	San Gabriel, CA	09/30/87	1st	GW contaminated with VOCs including PCE	Not provided	Well discharge treatment using activated carbon adsorption; and alternate water supply	Cleanup goals will reduce PCE below the detection limit of 1.0 ug/l for purgable halocarbons	$1,616,000 - $1,771,800 (capital) $181,400 - $303,100 (annual O&M)
09	Stringfellow Acid Pits, CA	06/25/87	2nd	GW contaminated with VOCs including TCE, organics, inorganics, and metals	Not provided	GW pump and treatment with possible discharge to POTW; and SW diversion/collection with discharge to creek	GW treatment will meet SAWPA limitations for discharge of arsenic 2.0 mg/l, cadmium 0.064 mg/l, chromium 2.0 mg/l, lead 0.58 mg/l, total toxic organics (excluding PCBs and pesticides) 0.58 mg/l, and PCBs and pesticides 0.02 mg/l	$1,047,000 - $1,136,000 (capital) $1,243,000 - $1,408,000 (annual O&M)

FY 1987 RECORD OF DECISION (ROD) SUMMARY TABLE

Region	Site Name, State/ Type	Signature Date	Oper- able Unit	Threat/Problem	Estimated Waste Volume	Components of Selected Remedy	Standards/Goals	Estimated Capital/O&M Costs
10	Colbert Landfill, WA	09/29/87	1st-Final	GW contaminated with VOCs including TCE and PCE	Not provided	Installation and operation of interception and extraction wells with onsite GW treatment; and provision of an alternate water supply	Cleanup goals based on MCLS include TCA 200.0 mg/l, DCE 7.0 ug/l, TCE 5.0 ug/l, and DCA 4,050.0 ug/l. Methylene chloride 2.5 ug/l and PCE 0.7 ug/l are based on the 10^{-6} cancer risk level	$24,000,000 (present worth)

SECTION IV

RECORDS OF DECISION SUMMARY TABLE

FY 1982 - 1986

The Record of Decision Summary Table provides an overview of site problems, selected remedies, cleanup criteria and estimated costs provided in the RODs signed between FY 1982-1986. The table is presented by Region, in alphabetical order according to the site name.

FY82-FY86 RECORD OF DECISION SUMMARY TABLE

REGION	SITE NAME, ST	ROD SIG DATE	OPERABLE UNIT	THREAT/ PROBLEM	ESTIMATED WASTE QUANTITY	MAJOR COMPONENETS OF SELECTED REMEDY	STANDARDS/ GOALS	ESTIMATED CAPITAL COSTS ($)	ANNUAL O&M COSTS ($)
01	Auburn Road, NH	09/17/86	1st	GW contaminated with VOCs including TCE, organics, and inorganics	Not provided	Extension of existing municipal water supply	Not provided	2,372,000 (present worth)	57,000
01	Baird and McGuire, MA	09/30/86	1st	GW, soil, and sediments contaminated with VOCs, organics, pesticides including dioxin, PAHs, and metals	191,000 yd^3	Excavation and onsite thermal destruction of contaminated soils; GW pump and treatment with onsite discharge to the aquifer; restoration of wetlands; and relocation of river	Excavation will remove approximately 95 percent of contamination by mass. Action levels for GW remediation will be developed during design	44,386,000	4,132,000 (present worth)
01	Beacon Heights, CT	09/23/85	1st - Final	GW, SW, and soil contaminated with VOCs and organics	Not provided	Excavation of contaminated soils with onsite consolidation; RCRA capping of consolidated wastes, gas venting, and stormwater management; leachate collection with offsite disposal at a licensed waste water treatment facility or onsite treatment with discharge to Hockanum Brook; extension of public water supply to the next municipal supply; fencing; and installation of a more extensive GW monitoring system	Excavation of soil to background levels, which will be determined during design	17,397,000	235,000

FY82-FY86 RECORD OF DECISION SUMMARY TABLE

REGION	SITE NAME, ST	ROD SIG DATE	OPERABLE UNIT	THREAT/ PROBLEM	ESTIMATED WASTE QUANTITY	MAJOR COMPONENETS OF SELECTED REMEDY	STANDARDS/ GOALS	ESTIMATED CAPITAL COSTS ($)	ANNUAL O&M COSTS ($)
01	Cannon Engineering/ Plymouth, MA	09/30/85	1st	GW, SW, soil, and sediments contaminated with PAHs, pesticides, and metals including lead	Not provided	Removal and offsite disposal of tanks, associated pipework, and foundation to a RCRA approved facility	Not provided	350,000 or 433,000	0
01	Charles George, MA	12/29/83	1st	GW contaminated with VOCs	Not provided	Extension of existing water supply system	Not provided	To be determined	To be determined
01	Charles George, MA	07/11/85	2nd	Air, GW, SW, and sludge contaminated with VOCs including toluene, organics, and metals	Not provided	Capping; SW diversion and collection system; venting off-gas collection system to the atmosphere; and a full peripheral leachate collection system	Not provided	13,613,725	1,252,901

FY82-FY86 RECORD OF DECISION SUMMARY TABLE

REGION	SITE NAME, ST	ROD SIG DATE	OPERABLE UNIT	THREAT/ PROBLEM	ESTIMATED WASTE QUANTITY	MAJOR COMPONENETS OF SELECTED REMEDY	STANDARDS/ GOALS	ESTIMATED CAPITAL COSTS ($)	ANNUAL O&M COSTS ($)
01	Hocomonco Pond, MA	09/30/85	1st - Final	GW, SW, soil, and sediments contaminated with organics, inorganics, and metals	Not provided	Former Lagoon: capping with site grading; and relocation of storm drain pipe Kettle Pond Area: pond dewatering and lowering area ground water levels; soil and waste excavation; dewatering sediments with onsite landfilling; air quality monitoring; if necessary, treatment with discharge of effluent water; construction of onsite landfill; and restoration of wetland areas Hocomonco Pond and Discharge Stream: mechanical dredging and onsite disposal of sediments; and treatment of pond water in system constructed for Kettle Pond area Otis Street: seal storm drain Isolated Areas: removal of contaminated materials and onsite disposal	Not provided	2,213,000	56,000

FY82-FY86 RECORD OF DECISION SUMMARY TABLE

REGION	SITE NAME, ST	ROD SIG DATE	OPERABLE UNIT	THREAT/ PROBLEM	ESTIMATED WASTE QUANTITY	MAJOR COMPONENETS OF SELECTED REMEDY	STANDARDS/ GOALS	ESTIMATED CAPITAL COSTS ($)	ANNUAL O&M COSTS ($)
01	Industri-plex, MA	09/30/86	1st	GW, soil, sludge, and air contaminated with metals, and VOCs including toluene and benzene	1,000 yd^3	Capping with soil grading; GW pump and treatment using air stripping with discharge to the aquifer; development of a multi-service GW response plan; institutional controls; stabilization of side slopes; and treatment of gaseous emissions	Eliminate direct contact threat of soils with arsenic <300 mg/kg, lead <600 mg/kg, and chromium <1000 mg/kg. GW treatment will meet MCLs. Air remedy will achieve NAAQ standards and unit cancer risks	12,302,300 or 12,612,000 (depending on air treatment) (present worth)	285,500 or 311,000 (depending on air treatment)
01	Keefe Environmental, NH	11/15/83	1st	SW and soil contaminated with VOCs including TCE and PCE, organics, and metals	Not provided	Removal and offsite disposal of lagoon contents, liner, and highly contaminated soil	Not provided	500,000	0
01	Kellogg-Deering Well Field, CT	09/25/86	1st	GW contaminated with VOCs including TCE and PCE	Not provided	Initiation of existing air stripping facilities with discharge to existing treatment plant and distribution system	GW treatment will achieve a 99 percent TCE removal efficiency, which corresponds to the 10^{-6} excess cancer risk	69,751	52,836
01	McKin Site, ME	07/15/83	IRM	GW, SW, soil, and air contaminated with VOCs including TCE and PCE	Not provided	Onsite cleaning and salvage of tanks; and offsite disposal of liquids and sludges	Not provided	47,000	0

FY82-FY86 RECORD OF DECISION SUMMARY TABLE

REGION	SITE NAME, ST	ROD SIG DATE	OPERABLE UNIT	THREAT/ PROBLEM	ESTIMATED WASTE QUANTITY	MAJOR COMPONENETS OF SELECTED REMEDY	STANDARDS/ GOALS	ESTIMATED CAPITAL COSTS ($)	ANNUAL O&M COSTS ($)
01	McKin Site, ME	07/22/85	2nd - Final	GW, SW, and soil contaminated with VOCs including TCE and PCE	Not provided	Onsite soil aeration; offsite disposal of drums; soil testing of petroleum contaminated areas; GW pump and treatment; SW discharge system; reevaluation of GW performance standards; offsite GW and SW monitoring program; and site removal and closure activities	GW treatment will meet 10^{-5} cancer risk level criteria including 1,1,1-trichloroethane 92 ug/l and TCE 28 ug/l. Soil will be treated to TCE 0.1 mg/kg	3,919,000	38,900
01	Nyanza Chemical, MA	09/04/85	1st	GW, SW, soil, and sediments contaminated with organics, inorganics, and metals	Not provided	Excavation and consolidation of sludge deposits and sediments with backfilling to original grade and revegetation of wetlands; RCRA capping over entire Hill area; construction of upgradient surface and GW diversion system; and downgradient GW monitoring	All outlying sludge deposits and contaminated soils and sediments associated with these deposits will be excavated to background levels for chromium, lead, and mercury	5,600,000 - 9,800,000	92,000 (year 1) 70,000 (years 2-30)
01	Picillo Farm, RI	09/30/85	1st	GW and soil contaminated with PCBs and VOCs including TCE	3,500 yd^3	Onsite disposal of primarily PCB and phenol contaminated soils in a RCRA/TSCA landfill; and site closure activities	Not provided	841,000	12,120 (year 1) 25,648 (years 2-4) 19,048 (years 5-30)

FY82-FY86 RECORD OF DECISION SUMMARY TABLE

REGION	SITE NAME, ST	ROD SIG DATE	OPERABLE UNIT	THREAT/ PROBLEM	ESTIMATED WASTE QUANTITY	MAJOR COMPONENETS OF SELECTED REMEDY	STANDARDS/ GOALS	ESTIMATED CAPITAL COSTS ($)	ANNUAL O&M COSTS ($)
01	Re-Solve, MA	07/01/83	1st	GW, SW, and soil contaminated with PCBs, VOCs, and metals	Not provided	Excavation and offsite disposal of lagoon contents and highly contaminated soil; and clay capping of entire site	Not provided	3,050,000	36,000
01	Sylvester, NH	07/29/82	IRM	GW, SW, and air contaminated with VOCs, inorganics, and heavy metals	Not provided	Capping with installation of a slurry wall	Not provided	8,822,000	750,000
01	Sylvester, NH	09/22/83	1st	GW, SW, and air contaminated with VOCs, inorganics, and metals	Not provided	GW pump and treatment system	GW treatment will attain ACLs	4,696,400	1,380,000
01	Tinkham Garage, NH	09/30/86	1st - Final	GW, SW, and soil contaminated with VOCs, including TCE and PCE organics, and metals	10,800 yd^3	Excavation and onsite treatment of soils via aeration, soil washing, or composting followed by onsite disposal; GW pump and treatment at POTW; and restoration of wetlands	At a minimum, soil will be treated to TVO 1 mg/kg or lower. GW will be treated to 5 ug/l for PCE and TCE	2,058,000	874,000
01	Western Sand & Gravel, RI	09/28/84	1st	GW contaminated with VOCs including TCE, and organics	Not provided	Installation of carbon canister filters as a temporary measure; and installation of a permanent alternate water supply	Not provided	1,493,513 (present worth)	156,800 (year 1) 100,800 (years 2-30)

FY82-FY86 RECORD OF DECISION SUMMARY TABLE

REGION	SITE NAME, ST	ROD SIG DATE	OPERABLE UNIT	THREAT/ PROBLEM	ESTIMATED WASTE QUANTITY	MAJOR COMPONENETS OF SELECTED REMEDY	STANDARDS/ GOALS	ESTIMATED CAPITAL COSTS ($)	ANNUAL O&M COSTS ($)
01	Winthrop Landfill, ME	11/22/85	1st - Final	GW contaminated with organics	Not provided	RCRA capping; alternate water supply; and institutional controls	ACLs for each GW contaminant will be established based on RCRA criteria. If ACL not established, protection will be to background levels	6,000,000	42,000 (if ACL no exceeded) 360,000 - 1,480,000 (if ACL exceeded)
02	Bog Creek Farm, NJ	09/30/85	1st	GW, soil, and sediments contaminated with VOCs, organics, and metals	Not provided	Removal of waste water and sediments from pond and bog with regrading and covering of both areas and treatment of waste water with discharge to stream; excavation of VOC contaminated soil with onsite or offsite incineration; evaluation of soil washing, segregation, and other technologies to reduce the volume of soils to be incinerated; compacted soil capping; fencing around site and work areas; and evaluation of monitoring program effectiveness	Excavation of soil with >10,000 mg/kg TVOs	9,200,000	54,400
02	Brewster Well Field, NY	09/30/86	1st	GW contaminated with VOCs including TCE and PCE	Not provided	GW pump and treatment using existing air stripping facilities with reinjection to the aquifer	Existing air stripping system exceeds State and Federal ARARs for GW which include TCE 10 ug/l (State) and 5 ug/l (Federal)	163,912	27,468

FY82-FY86 RECORD OF DECISION SUMMARY TABLE

REGION	SITE NAME, ST	ROD SIG DATE	OPERABLE UNIT	THREAT/ PROBLEM	ESTIMATED WASTE QUANTITY	MAJOR COMPONENETS OF SELECTED REMEDY	STANDARDS/ GOALS	ESTIMATED CAPITAL COSTS ($)	ANNUAL O&M COSTS ($)
02	Bridgeport, NJ	12/31/84	1st - Final	GW, SW, soil, and sediments contaminated with VOCs and PCBs	Not provided	Disposal of oily waste, sediment, and sludge via onsite incineration; removal and disposal of contaminated water using onsite treatment; drum excavation with offsite removal; maintenance pumping; removal and offsite disposal of tanks and waste; and installation of an alternate water supply pipeline	GW must meet TOC limit of 50 mg/l on a 30 day average	57,672,000	20,000
02	Burnt Fly Bog, NJ	11/16/83	1st	GW, SW, and soil contaminated with PCBs, VOCs, and metals	Not provided	Excavation and offsite disposal of liquids, sludges, asphalt piles, drums, and contaminated soil from lagoons and northern wetlands; restoration of original site contours and vegetation; and implementation of a 5-year GW monitoring program	Not provided	2,200,000 (Phase I) 5,110,000 (Phase II)	60,000
02	Caldwell Trucking, NJ	09/25/86	1st	GW and soil contaminated with organics including PAHs and PCBs, VOCs including TCE, inorganics, and metals including lead	28,000 yd^3	Excavation and heat addition treatment of soil and waste materials with onsite disposal; GW treatment using air stripping; and provision of an alternate water supply	Not provided	5,490,000	48,000

FY82-FY86 RECORD OF DECISION SUMMARY TABLE

REGION	SITE NAME, ST	ROD SIG DATE	OPERABLE UNIT	THREAT/ PROBLEM	ESTIMATED WASTE QUANTITY	MAJOR COMPONENETS OF SELECTED REMEDY	STANDARDS/ GOALS	ESTIMATED CAPITAL COSTS ($)	ANNUAL O&M COSTS ($)
02	Chemical Control, NJ	09/19/83	1st	GW and soil contaminated with VOCs, organics including PCBs, pesticides, and inorganics	Not provided	Removal of gas cylinders; reconstruction of storm sewer catch basins and grates; cleaning of the storm sewer system with constructon of curbing; and decontamination of box trailer and vacuum truck	Not provided	732,500	0
02	Combe Fill North, NJ	09/29/86	1st - Final	GW and soil contaminated with organics and low levels of VOCs	Not provided	Capping with grading and compacting of disposal areas; installation of drainage and venting systems; and site fencing	Not provided	10,500,000	168,000
02	Combe Fill South, NJ	09/29/86	1st - Final	GW and soil contaminated with VOCs including TCE and PCE	Not provided	RCRA capping; active gas collection and treatment system; GW and leachate pump and treatment with discharge to brook; alternate water supply; SW controls; and fencing	Not provided	46,060,700	673,000
02	D'Imperio Property, NJ	03/27/85	1st - Final	GW and soil contaminated with VOCs	3,900 yd^3	Excavation and offsite disposal of contaminated waste, soil, and surface drums; RCRA capping; and GW pump and treatment	Cleanup will be monitored and assessed in accordance with Drinking Water Standards to determine need for additional remediation	4,251,551	1,169,449 (present worth)

FY82-FY86 RECORD OF DECISION SUMMARY TABLE

REGION	SITE NAME, ST	ROD SIG DATE	OPERABLE UNIT	THREAT/ PROBLEM	ESTIMATED WASTE QUANTITY	MAJOR COMPONENETS OF SELECTED REMEDY	STANDARDS/ GOALS	ESTIMATED CAPITAL COSTS ($)	ANNUAL O&M COSTS ($)
02	Florence Landfill, NJ	06/27/86	1st - Final	GW and soil contaminated with VOCs and heavy metals	Not provided	Capping with slurry wall containment system; removal and onsite disposal of lagoon liquids and surface debris; leachate collection, treatment, and offsite disposal; gas collection and treatment; and partial fencing	Not provided	8,021,000	170,000
02	Friedman Property, NJ	04/30/85	1st - Final	No threat	None	No action with five-year onsite well monitoring; and deed restrictions	Not provided	0	12,000
02	GEMS Landfill, NJ	09/27/85	1st - Final	GW, SW, soil, and air contaminated with VOCs, inorganics, and organics	Not provided	Capping with regrading of existing landfill slopes; gas collection and treatment system; GW pump and treatment with discharge to POTW or SW; remediation of Holly Run and Briar Lake; SW controls; fencing; and extension of existing water supply system	Discharge criteria will be established by the State and are dependent on the point of discharge (to be determined)	27,365,000	601,000
02	Goose Farm, NJ	09/27/85	1st	GW, SW, and soil contaminated with VOCs including TCE, and organics including PCBs	Not provided	GW and soil flushing with GW treatment and reinjection into soil; and conduction of testing programs to evaluate capping and extent of drum pit PCB contamination	GW treatment system will be designed to meet NPDES permit limits	3,014,000	0

FY82-FY86 RECORD OF DECISION SUMMARY TABLE

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02	Helen Kramer, NJ	09/27/85	1st - Final	GW and SW contaminated with VOCs including TCE, organics, and inorganics	Not provided	Clay capping with slurry wall containment system; gas collection and treatment system; dewatering, excavation, and filling of leachate ponds and lagoons; fencing of site and work areas; SW controls; and GW and leachate collection and treatment with disposal at POTW or to SW	Not provided	36,478,000 or 38,089,000 (pending onsite treatment)	1,047,900 (year 1 pretreatmer 792,100 (complete onsite treatment)
02	Hudson River, NY	09/25/84	1st - Final	Soil and river sediments contaminated with PCBs	Not provided	In-situ containment of remnant shoreline deposits; and evaluation of Waterford Water Treatment Facility	Not provided	Not provided	Not provide
02	Hyde Park, NY	11/26/85	1st - Final	GW and soil contaminated with VOCs, and organics including PCBs and dioxin	80,000 tons	Extraction and incineration of non-aqueous phase liquids; GW pump and treatment using activated carbon; and construction of plume contaminant systems	The 10^{-6} cancer risk level will be achieved	17,000 (present worth)	Not provide
02	Kentucky Avenue Well Field, NY	09/30/86	1st	GW contaminated with VOCs including TCE	Not provided	Extension of public water supply to private well users; and GW monitoring	Remedy will attain the MCL for TCE 5 ug/l	303,800	19,000
02	Krysowaty Farm, NJ	06/20/84	1st - Final	GW and soil contaminated with VOCs, organics, and pesticides	Not provided	Excavation and offsite disposal of contaminated soil and waste; and provision for a permanent alternate water supply	Not provided	2,164,014	145,698

FY82-FY86 RECORD OF DECISION SUMMARY TABLE

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02	Lang Property, NJ	09/29/86	1st - Final	GW, SW, soil, and sediments contaminated with VOCs and heavy metals	6,500 yd^3	Excavation and offsite disposal of soils and waste material with filling and grading; GW pump and treatment with reinjection into aquifer; and fencing	GW treatment effluent will attain SDWA criteria	2,322,000	612,000
02	Lipari Landfill, NJ	08/03/82	1st	GW, SW, and soil contaminated with VOCs and organics	Not provided	Capping with slurry wall containment system; and GW collection and treatment with discharge at POTW	Not provided	1,769,150	91,250
02	Lipari Landfill, NJ	09/30/85	2nd	GW and soil contaminated with VOCs including toluene, organics, and metals	Not provided	GW and leachate extraction with injection wells within containment system for flushing and dewatering with onsite pretreatment and discharge to POTW; and flushing of containment system for cleansing	Marginal benefits of successive flushing cycle and effects of leachate release into GW will be evaluated within 5 years	3,464,000	715,000
02	Lone Pine Landfill, NJ	09/28/84	1st - Final	GW, SW, and soil contaminated with VOCs, pesticides, and metals	Not provided	Multi-layer surface sealing with slurry wall containment system; and GW collection and treatment at POTW or onsite plant	Not provided	10,642,050	324,734

FY82-FY86 RECORD OF DECISION SUMMARY TABLE

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02	Love Canal, NJ	05/06/85	1st	SW, sediments, and air contaminated with VOCs, organics, pesticides including dioxin, and metals	Not provided	Removal and dewatering of contaminated creek sediments; inspection of sewer reaches for defects, repairing of damaged flood gate, and hydraulic cleaning of designated sewers; dredging and cleaning of culverts; berm construction; interim onsite storage of sediments; and installation of an administration building	CDC recommends soil treatment to TCDD 1 ug/kg	8,929,000 - 12,000,000	Not provided
02	Marathon Battery, NY	09/30/86	1st	SW, sediments, and biota contaminated with metals including cadmium, nickel, and cobalt	30,083 yd^3	Hydraulic dredging of sediments with chemical fixation and offsite disposal; dredging, water treatment, and disposal; marsh restoration; and site access restrictions	Sediments will be treated to a 100 mg/kg established background concentration. Standards for total cadmium water concentrations include 6.6×10^{-4} mg/l and 2.0×10^{-3} mg/l for water hardness levels of 50 mg/l and 200 mg/l, respectively	16,640,000	3,530,000 (year 1) 180,000 (years 2- 127,000 (years 6-

FY82-FY86 RECORD OF DECISION SUMMARY TABLE

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02	Metaltec/Aero-systems, NJ	06/30/86	1st	Soil and GW contaminated with VOCs including TCE and PCE, and metals including copper, chromium, and lead	10,000 yd^3	Excavation with heat treatment and offsite disposal of soils; and alternate water supply	MCLs and State guidelines set action levels for GW of TCE 5 ug/l and PCE 5 ug/l. Soil action levels include copper 170 mg/kg, chromium (total) 100 mg/kg, and lead 100 mg/kg	7,005,000 (sanitary landfill) or 11,735,000 (RCRA landfill)	179,000
02	Olean Well Field, NY	09/24/85	1st	GW contaminated with VOCs including TCE	Not provided	Reactivation of municipal wells; construction of two air stripping systems for GW treatment with discharge to public water supply system; extension of existing Olean water lines; inspection of McGraw Edison industrial sewer and analysis of repair and replacement options; and recommendation of institutional controls to restrict GW usage	GW will be treated to TCE 5 ug/l	1,996,780	799,040
02	PAS Oswego, NY	06/06/84	1st - Final	Soil contaminated with organics, VOCs, and metals	Not provided	Limited excavation and offsite removal of contaminated soil, subsurface tanks, and drums; RCRA capping with slurry wall containment system and site grading; and GW and leachate recovery and treatment	Not provided	1,363,700	117,000

FY82-FY86 RECORD OF DECISION SUMMARY TABLE

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02	Pijak Farm, NJ	09/30/84	1st - Final	GW and soil contaminated with VOCs, organics including PCBs, pesticides, and metals	Not provided	Removal and offsite disposal of drums and lab packs; and excavation and offsite disposal of visibly contaminated soil with GW pumping and removal	Not provided	1,962,750	53,600
02	Price Landfill, NJ	09/20/83	1st	GW and soil contaminated with VOCs and organics	Not provided	Replacement and relocation of the water supply well field and transmission facilities; and analysis of plume management, source control, and GW treatment remedies	Not provided	5,070,000	Not provid
02	Price Landfill, NJ	09/29/86	2nd - Final	GW contaminated with VOCs including TCE, organics, and inorganics	Not provided	GW pump and onsite pretreatment with discharge to a POTW; site capping; and fencing	Extraction and treatment will continue until TVO concentration reaches 10 ug/l or less in GW	9,050,000	1,010,000 (years 1 5 255,000 (years 6-2
02	Rockaway Borough Well Field, NJ	09/29/86	1st	GW contaminated with VOCs including TCE and PCE	Not provided	GW treatment using existing system	Municipal treatment system will be designed in accordance with SDWA standards to remove TCE and PCE to 5 ug/l each	0	74,800
02	Sharkey Landfill, NJ	09/29/86	1st - Final	GW and soils contaminated with VOCs including TCE, inorganics, and metals	Not provided	Capping; and GW pump and treatment	Not provided	23,173,000	330,000

FY82-FY86 RECORD OF DECISION SUMMARY TABLE

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02	Sinclair Refinery, NY	09/30/85	1st	Soil contaminated with VOCs and metals	Not provided	Removal and offsite disposal of 300 drums; backfilling with clean fill; onsite consolidation of waste from South Landfill area with RCRA capping; site fencing; and partial river channelization	GW and SW will be treated to total organics 100 ug/l, toluene 10 ug/l, 1,1,1-trichloroethane 50 ug/l, arsenic 5 ug/l, zinc 30 ug/l, and PCBs 0.0095 ug/l. Soil will be removed to toluene 72 ug/kg, trans-1,2-dichloroethylene 325 ug/kg, arsenic 15,000 ug/kg, zinc 53,000 ug/kg, and PCBs 12.1 ug/kg	8,759,000	30,000
02	Spence Farm, NJ	09/30/84	1st	GW and soil contaminated with organics, metals, and inorganics	Not provided	Excavation and offsite disposal of all drums, lab packs, and visibly contaminated soil; and site grading and surface restoration	Not provided	845,500	95,300
02	Swope Oil, NJ	09/27/85	1st	GW and soil contaminated with VOCs, and organics including PCBs	Not provided	Capping; removal of tanks and building debris with offsite incineration; treatment or disposal of tank contents with offsite disposal of tanks and building debris; excavation and offsite disposal of buried sludge waste area; and excavation and offsite disposal of PCB contaminated soil	In accordance with State policy, soils will be excavated up to 1.5 feet, which contain PCBs >5 mg/kg	5,590,356	33,000

FY82-FY86 RECORD OF DECISION SUMMARY TABLE

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02	Syncon Resins, NJ	09/29/86	1st	GW, soil, and sediments contaminated with VOCs, organics including PCBs, pesticides, and metals	700 yd^3	Excavation of lagoon sediments and highly contaminated subsurface soils with offsite disposal	Soil removal to achieve PCBs 5 mg/kg, base-neutrals 100 mg/kg, TVOs 1 mg/kg, and numerous levels for heavy metals. No standards have been set for GW treatment	5,600,000	209,000
					2,000 yd^3	Excavation and offsite disposal of surface soils; and GW pump and treatment			
02	Vestal Water Supply Well 1-1, NY	06/27/86	1st	GW contaminated with VOCs including TCE	Not provided	GW pump and treatment using air stripping; alternate water supply; and cessation of untreated discharge to river	Not provided	389,400	119,750
02	Wide Beach, NY	09/30/85	1st - Final	GW and soil contaminated with PCBs	Not provided	Excavation and chemical treatment of PCB contaminated soil with backfilling of treatment residuals; offsite disposal of contaminated asphaltic material, and repavement of roadways and driveways; perched water treatment in sewer trench; construction of hydraulic barrier at end of sewer trench; conduction of treatability study to determine effective PCB and soil treatment; and sewage and sediments sampling	Based on 10^{-6} lifetime cancer risk, media cleanup goals for PCBs include soil 10 mg/kg, air 1.67 ug/m^3, GW 100 ug/l, and SW 7.9×10^{-5} ug/l	9,295,000	0

FY82-FY86 RECORD OF DECISION SUMMARY TABLE

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03	Army Creek Landfill, DE	09/30/86	1st	GW, SW, soil, and sediments contaminated with VOCs, inorganics, and metals	1,900,000 yd^3	Capping; downgradient GW pumping with monitoring; and possible upgradient controls	Not provided	12,030,000 or 12,340,000 (upgradient controls)	306,000 or 388,000 (upgradient controls)
03	Blosenski Landfill, PA	09/29/86	1st	GW, SW, and soil contaminated with PCBs, VOCs including benzene and TCE, inorganics, and pesticides	Not provided	Excavation and removal of buried drums and other materials with RCRA offsite disposal; alternate water supply; GW pumping with onsite treatment; capping with SW diversion and gas venting; and source reduction program	Removal of contaminated media will attain a 10^{-6} excess cancer risk. GW will initially be treated to ACLs, then to levels established by NPDES	11,000,000 - 15,000,000 (13,000,000 estimated baseline cost)	534,300 (years 1-2)
03	Bruin Lagoon, PA	06/02/82	1st	GW, SW, and soil contaminated with asphalt sludge, acid liquids, waste oil, resins, fly ash, coal fires, sulfuric and sulfonic acids, and petroleum waste	Not provided	Removal and offsite disposal of liquid lagoon contents with physical stabilization of lagoons, effluent pond cleanup, and dike stabilization; capping; and GW diversion	Not provided	1,456,000	60,000
03	Bruin Lagoon, PA	09/29/86	2nd - Final	Soils and bedrock contaminated with acidic sludges and metals	17,500 yd^3	Stabilization/ neutralization of sludge and perched liquid zone; in-situ bedrock treatment; and capping	Not provided	2,695,000	16,000

FY82-FY86 RECORD OF DECISION SUMMARY TABLE

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03	Chisman Creek, VA	09/30/86	1st	GW, soil (disposal pits with fly ash), and SW contaminated with trace metals and inorganics	484,600 yd^3	Capping (2 pits); capping and upgradient GW diversion of one pit; alternate water supply; possible deed restrictions; and GW drainage and onsite treatment	Action for nickel complies with the AWQC for protection of fresh water aquatic life (88 ug/l - 280 ug/l) and salt water aquatic life (17 ug/l)	14,119,000	506,000 (year 1) 64,000 (years 2-30)
03	Delaware City PVC, DE	09/30/86	1st	GW, SW, and soil contaminated with VOCs including TCE	25,000 yd^3	Excavation and removal of contaminated soils and sludges with offsite disposal; capping; GW pump and treatment; and alternate water supply	Recovery wells will operate until concentrations of VCM, EDC, and TCE reach 1 ug/l, 0.94 ug/l, and 2.7 ug/l, respectively for 2 consecutive sample analyses	1,904,000	43,000
03	Douglassville, PA	09/27/85	1st	Soil and sediments contaminated with VOCs, pesticides, organics including PAHs and PCBs, and metals	Not provided	Removal and consolidation of contaminated soils and sediments from the drainage ditch, drainage swale, buried lagoon, and drum disposal areas with onsite disposal under cap; capping former sludge lagoon area and sludge disposal area; installation of levees and dikes to protect from 100-year flooding event; and soil predesign study to determine extent of excavation and capping	Not provided	5,569,500	196,000

FY82-FY86 RECORD OF DECISION SUMMARY TABLE

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03	Drake Chemical, PA	09/30/84	1st	GW, SW, soil, and stream sediments contaminated with VOCs, pesticides, and inorganics	Not provided	Capping and grading of leachate stream; partial excavation and temporary onsite storage of contaminated sediments; and construction of conduit and a granular drain	Not provided	445,311	9,427
03	Drake Chemical, PA	05/13/86	2nd	GW, soil, sludges, buildings, and debris contaminated with organics and inorganics	3,900 yd^3 192,000 gals	Incineration of onsite chemicals; demolition and offsite removal of buildings, tanks, and debris; waste water pump and treatment of lagoons; metal recycling; and analysis with possible disposal of metal decontamination recycling fluid	Not provided	3,143,000	0
03	Enterprise Avenue, PA	05/10/84	1st - Final	SW and soil contaminated with VOCs, organics, and metals	Not provided	Offsite disposal of soils which fail key indicator parameter testing levels; backfilling of site with soils which passed parameter test; and grading and vegetating as a final cover	Not provided	4,324,000	4,200

FY82-FY86 RECORD OF DECISION SUMMARY TABLE

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03	Fischer & Porter, PA	05/04/84	1st - Final	SW contaminated with VOCs including TCE and PCE	Not provided	Improvements in manufacturing facility to prevent release; onsite installation of pumping wells and packed column aeration to reduce contaminant levels in effluents with discharge to SW; and treatment of contaminated wells	Not provided	Not provided	Not provide
03	Harvey-Knott, DE	09/30/85	1st - Final	GW, SW, and soil contaminated with VOCs, metals, organics including PCBs, and inorganics	Not provided	SW collection and treatment with offsite disposal; removal and offsite disposal of sediments, sludges, bulk wastes, drums, and debris; GW extraction and treatment with reinjection to soil for flushing; and site grading with 2 foot clean soil cover	Target soil and GW ACLs will be established during design	3,572,000	44,000
03	Heleva Landfill, PA	03/22/85	1st - Final	GW and SW contaminated with VOCs including TCE and PCE	Not provided	RCRA capping; SW diversion and gas venting systems; conduction of a predesign study to fully delineate the source of contamination and determine sink-hole activity; construction of an onsite treatment facility; GW pump and treatment; and extension of municipal water main to affected residents	GW will be treated to PCE 1.0 ug/l, TCE 1.8 - 5.0 ug/l, vinyl chloride 2.0 ug/l, 1,1,1-trichloroethane 21.7 ug/l, and toulene 15,000 ug/l	7,791,000	62,000

FY82-FY86 RECORD OF DECISION SUMMARY TABLE

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03	Industrial Lane, PA	09/29/86	1st	GW contaminated with VOCs	Not provided	Provision of alternate water supply; and possible GW usage restrictions	Not provided	30,800	0
03	Lackawanna Refuse Site, PA	03/22/85	1st - Final	SW and soil contaminated with VOCs, organics, and metals	Not provided	Excavation and offsite disposal of drums and highly contaminated fill; leachate collection and surface drainage diversion; clay capping and construction of gas venting systems; and reconstruction of access road	Excavation limits will be determined by background contaminant levels	8,200,000	Not provided
03	Lansdowne Radiation, PA	08/02/85	1st	Dwellings contaminated with radioactive materials including radium	Not provided	Permanent relocation of residents	EPA guidelines for radiation include gamma 0.17 rem/yr, radon 0.03 WL, and soil activity 5-15 pCi/g	1,500,000	10,000
03	Lansdowne Radiation, PA	09/22/86	2nd	Dwellings and soil contaminated with radioactive materials including radium	Not provided	Demolition and offsite disposal of two homes; and excavation and offsite disposal of contaminated soil	EPA guidelines for radiation include gamma 0.17 rem/yr, radon 0.03 WL, and soil activity 5-15 pCi/g	4,000,000 - 4,500,000	"Minimal"
03	Leetown Pesticide, WV	03/31/86	1st - Final	Soil and debris contaminated with pesticides	3,600 yd^3	Excavation, consolidation, and anaerobic biodegradation of contaminated soil; and removal and offsite disposal of contaminated debris	The target soil level for DDT and its metabolites is 300 ug/kg, which is equivalent to the 10^{-6} carcinogenic risk level	1,014,000	10,000 (year 1) 7,500 (year 2)

FY82-FY86 RECORD OF DECISION SUMMARY TABLE

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03	Lehigh Electric, PA	02/11/83	1st - Final	Soil contaminated with VOCs and PCBs	Not provided	Excavation and removal of contaminated soil, transformers, and debris with offsite disposal of soil; demolition of onsite buildings; and backfilling, grading, and vegetation of site to minimize erosion and control runoff	Offsite disposal of soils with PCB concentration >50 mg/kg	6,401,000	46,000
03	Limestone Road, MD	09/30/86	1st	Soils, GW, SW, and sediment contaminated with VOCs including TCE and PCE, and metals	Not provided	Capping with grading and fencing	Not provided	1,192,580	To be determined
03	Matthews Electroplating, VA	06/02/83	1st - Final	GW and soil contaminated with metals including chromium	Not provided	Extension of existing municipal water system to affected residents	Not provided	662,000	292,000
03	McAdoo, PA	06/05/84	IRM	GW and soil contaminated with organics and inorganics	Not provided	Cleaning and removal of underground waste storage tanks; excavation and offsite disposal of visibly contaminated soil; and evaluation of analytical results of soil analyses	Not provided	114,500	0

FY82-FY86 RECORD OF DECISION SUMMARY TABLE

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03	McAdoo Associates, PA	06/28/85	2nd	GW, SW, and soil contaminated with paint sludges, spent solvents, metallic sludges, acid and caustic liquids, toluene, waste oil/water, and solid waste	Not provided	Removal and offsite disposal of the onsite tank, debris, and contaminated soil; limited excavation of soil; RCRA capping; SW diversion; and site covering	Excavation of soil "hot spots" which exceed cadmium 0.2 ug/kg, chromium 809 ug/kg, and cyanide 33 ug/kg	2,360,000	Not provide
03	Middletown Road, MD	03/17/86	1st - Final	No threat	None	No action	Not provided	0	0
03	Millcreek Dump, PA	05/07/86	1st - Final	Soils, sediments, and GW contaminated with VOCs, organics, including PCBs and PAHs, inorganics, and metals	Not provided	Excavation and onsite consolidation of soils under a RCRA cap with site grading and revegetation; soil capping over remaining soil; SW management; GW pump and treatment; and flood retention system	Soil cleanup goals include PCBs 10 mg/kg, PAHs 2,940 ug/kg, TCE 10 ug/kg, phenols 9,000 mg/kg, and toluene 1,783 ug/kg	12,000,000 - 18,000,000 (15,000,000 estimated baseline cost)	1,763,000 (present worth)
03	Moyer Landfill, PA	09/30/85	1st - Final	GW and SW contaminated with metals, VOCs including TCE, and inorganics including arsenic and radioactive materials	Not provided	Soil/clay capping; erosion and sedimentation control measures; SW diversion; leachate collection, treatment, and discharge; methane gas recovery and sale; security/fencing measures; and RCRA closure	Not provided	6,293,500	332,000

FY82-FY86 RECORD OF DECISION SUMMARY TABLE

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03	Sand, Gravel & Stone, MD	09/30/85	1st	GW, SW, soil, and sediments contaminated with organics and metals	Not provided	Excavation and offsite disposal of hazardous materials; and GW extraction and treatment with discharge to ponds, aquifer, or creek	GW will be treated to background levels for heavy metals and organic compounds	7,095,000	753,000
03	Taylor Borough, PA	06/28/85	1st	SW, soil, and sediments contaminated with VOCs including TCE, and organics	Not provided	Removal and offsite disposal of drums and remnants; SW collection and treatment; excavation and offsite disposal of contaminated soil, waste, and sediments from two of the former drum storage areas (areas 1 & 2) with backfilling and placement of a 24-inch soil cover over the remaining three former drum storage areas; and fencing	Excavation of sediments, soils, and wastes to background levels	4,237,000	Not provide
03	Taylor Borough, PA	03/17/86	2nd - Final	Possible GW contamination with VOCs and metals	Not provided	No further action with semi-annual GW monitoring	Not provided	0	8,000 or 16,000
03	Tybouts Corner Landfill, DE	03/06/86	1st - Final	Soils and GW contaminated with VOCs including TCE, and inorganics	Not provided	Excavation of waste and soils with onsite consolidation and capping; and GW pump and treatment	GW will be treated to the cancer risk of 10^{-4} for carcinogens, which includes TVO 100 ug/l	FS estimate: $35,000,000; PRP estimate: $15,000,000	4,600,000 (present worth)

FY82-FY86 RECORD OF DECISION SUMMARY TABLE

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03	Tyson's Dump, PA	12/21/84	1st	GW, SW, soil, and stream sediments contaminated with VOCs	Not provided	Excavation and offsite disposal of contaminated soils and wastes; upgrading of the existing air stripping facility to treat leachate, shallow GW, and surface run-on; and excavation and offsite disposal of contaminated sediments	Not provided	5,718,000	351,000
03	Wade, PA	08/30/84	1st - Final	Soil contaminated with organics, metals, and inorganics	Not provided	Removal and offsite disposal of contaminated soil, tires, tankers, waste piles, and underground storage tanks; demolition of buildings, leveling of debris, filling, and grading of property; and top soil and seed capping	Not provided	1,580,050	320,000
03	Westline Site, PA	07/03/86	1st - Final	Soils contaminated with tars containing phenols and PAHs	710 yd^3	Excavation and offsite incineration of tar deposits; backfilling with clean soil; and GW verification study	Soils will be excavated to a 10^{-4} cancer risk level for contaminants present onsite, which is consistent with the 10^{-6} risk level for GW	744,000	0

151

FY82-FY86 RECORD OF DECISION SUMMARY TABLE

REGION	SITE NAME, ST	ROD SIG DATE	OPERABLE UNIT	THREAT/ PROBLEM	ESTIMATED WASTE QUANTITY	MAJOR COMPONENETS OF SELECTED REMEDY	STANDARDS/ GOALS	ESTIMATED CAPITAL COSTS ($)	ANNUAL O&M COSTS ($)
04	A.L. Taylor, KY	06/18/86	1st - Final	Soils, SW, and sediments contaminated with VOCs, PCBs, PAHs, and metals	Not provided	Excavation of soils, sediments, and sludge with onsite containment and capping	Not provided	795,349	Not provid
04	American Creosote, FL	09/30/85	1st	Soil contaminated with aromatic hydrocarbons	Not provided	Excavation and consolidation of contaminated soil from areas both on and off the site in an onsite RCRA landfill	Excavation of soils and sludges to MCLs including PAH 12.0 mg/kg and benzene 0.13 mg/kg	5,678,000	50,000 (years 1-5 19,000 (years 6-3
04	Biscayne Aquifer Site, FL	09/16/85	1st - Final	GW contaminated with VOCs	Not provided	Addition of air stripping to existing water treatment system; and operation of Miami Spring and Preston municipal wells	Cleanup goals based on EPA primary drinking water standards and the 10^{-6} cancer risk level have been identified for 50 priority pollutants	5,268,000	334,400
04	Coleman Evans, FL	09/25/86	1st - Final	GW, soil, and sediments contaminated with VOCs, organics including PCP, and metals including chromium	9,000 yd^3	Excavation of PCP contaminated soils and sediments with onsite incineration; backfilling with decontaminated soil; GW recovery, storage, and analysis; possible onsite GW treatment using carbon adsorption with discharge to surface	All soils containing PCP in excess of 10 mg/kg will be excavated. GW will be treated to levels which comply with Drinking Water Standards or Water Quality Criteria	3,000,000 - 3,800,000	0

FY82-FY86 RECORD OF DECISION SUMMARY TABLE

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04	Davie Landfill, FL	09/30/85	1st	GW and sludge lagoon contaminated with organics, and inorganics including cyanide and sulfide	75,000 yd^3	Dewatering and stabilization of sludge lagoon contents and placement in single lined cell; and capping	Cleanup goals prevent exceedance of drinking water standards or the 10^{-6} cancer risk level	3,000,000 - 3,700,000	100,000
04	Distler Brickyard, KY	08/19/86	1st - Final	GW and soils contaminated with VOCs including TCE, metals, and inorganics	8,000 yd^3	Excavation and offsite disposal of all contaminated soil; backfilling with clean natural granular soils; and GW pump and offsite treatment at POTW with reinjection into the aquifer	GW will be treated and soil will be excavated to background levels	7,500,000 (present worth)	1,568,000 (years 1-2) 44,000 (years 3-30
04	Distler Farm, KY	06/19/86	1st - Final	GW and soils contaminated with VOCs including TCE and PCE, metals, and inorganics	Not provided	Excavation and offsite disposal of all contaminated soil; backfilling with clean natural granular soil; and GW pump and offsite treatment at POTW with reinjection of uncontaminated water into the aquifer	GW will be treated and soil will be excavated to background levels	11,138,400	113,600 (years 1-10 20,000 (years 11-30)
04	Gallaway Ponds, TN	09/26/86	1st - Final	Pond sediments contaminated with pesticides and inorganics	1,600 yd^3	Excavation of sediments with onsite consolidation; RCRA site closure; pond water dilution with discharge to tributary; and institutional controls	Pond water dilution will meet Ambient Water Quality Criteria	344,735	163,265 (present worth)

FY82-FY86 RECORD OF DECISION SUMMARY TABLE

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04	Hipps Road Landfill, FL	09/03/86	1st - Final	GW contaminated with VOCs including TCE, and metals	Not provided	GW pump and treatment at POTW; RCRA Subtitle D landfill closure; and institutional controls	GW will be treated to meet SDWA requirements, Water Quality Criteria Human Health Standards, or the 10^{-6} cancer risk	3,900,000 - 4,400,000	Not provid
04	Hollingsworth, FL	04/10/86	1st - Final	GW and soil contaminated with VOCs including TCE	Not provided	Excavation, aeration, and onsite replacement of VOC contaminated soil; and GW pump and treatment with reinjection into the aquifer	GW cleanup goals will be based on the 10^{-6} cancer risk level and State Drinking Water Standards	653,730	364,215
04	Lees Lane Landfill, KY	09/25/86	2nd - Final	GW, SW, and soil contaminated with VOCs, metals, and inorganics	212,400 tons	Removal of exposed drums and offsite disposal; capping of hot spots and exposed trash areas; gas collection and venting system; possible alternate water supply; bank stabilization; and institutional controls	ACLs will be developed from GW monitoring data	2,343,000	127,440
04	Miami Drum Services, FL	09/13/82	1st	GW and soil contaminated with organics, pesticides, and metals	Not provided	Excavation and offsite disposal of soil; and treatment of GW encountered during excavation	Not provided	1,568,660	0

FY82-FY86 RECORD OF DECISION SUMMARY TABLE

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04	Mowbray Engineering, AL	09/25/86	1st - Final	Swamp soils contaminated with PCBs	4,800 yd^3	Excavation of PCB-contaminated soil with either onsite incineration, offsite incineration, or solidification/ stabilization of the waste	Soils with 25 mg/kg PCBs or greater will be excavated and treated	1,200,000 - 2,000,000 (offsite incineration) (present worth) 1,100,000 - 1,800,000 (onsite incineration) (present worth) 750,000 (solidification/ stabilization) (present worth)	0 0 0
04	Pepper's Steel, FL	03/12/86	1st - Final	GW, soil, and sediments contaminated with organics including PCBs, and metals	PCB>1 mg/kg, approximately 48,000 yd^3; lead> 1000 mg/kg, 21,500 yd^3; arsenic> 5 mg/kg, 9,000 yd^3 (waste quantities not additive)	Excavation, solidification/ stabilization, and onsite disposal of soil; collection and offsite disposal of free oil; and land use institutional controls	Soil will be excavated if exceeds PCB 1 mg/kg, lead 1000 mg/kg, and arsenic 5 mg/kg	5,212,000	42,500
04	Pioneer Sand, FL	09/26/86	1st - Final	Soil and pond waters contaminated with VOCs, sludges, metals, and inorganics	Not provided	RCRA Subtitle D landfill closure; leachate collection, treatment, and onsite disposal; SW treatment and onsite discharge; and cover system for sludge and pond waste	Not provided	462,025	45,000 (year 1) 34,900 (years 2-30

FY82-FY86 RECORD OF DECISION SUMMARY TABLE

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04	Sapp Battery, FL	09/26/86	1st - Final	GW, SW, soils, and sediments contaminated with metals	94,000 yd^3 (soil) 20,000 yd^3 (sediments)	Excavation, solidification/ fixation, and onsite disposal of solidified soil and sediments; GW pump and treatment; SW treatment and discharge; and assessment of potential institutional controls	Cleanup criteria for indicator chemicals were set based on Federal and State standards and risk-based levels	14,318,544	25,631
04	SCRDI/Dixiana, SC	09/26/86	1st - Final	GW contaminated with VOCs including PCE, organics including PAHs and PCBs, inorganics, and pesticides	Not provided	GW pump and treatment with discharge to SW	GW will be treated to attain the ACL equivalent to 10^{-6} excess cancer risk	751,250	2,128,100
04	Varsol Spill Site, FL	03/29/85	1st	No threat	Not provided	No further action	Not provided	0	0
04	Whitehouse Waste Oil Pits, FL	05/30/85	1st - Final	GW, SW, and soil contaminated with VOCs including benzene, metals including chromium, and organics including phenols and PAHs	Not provided	Slurry wall construction; GW pump and treatment; removal of contaminated sediments; and RCRA capping of the entire site	GW and SW quality should meet State primary drinking water standards. Soil and sediments will be removed to background or "minimal" risk levels	3,049,000	96,630

156

FY82-FY86 RECORD OF DECISION SUMMARY TABLE

REGION	SITE NAME, ST	ROD SIG DATE	OPERABLE UNIT	THREAT/ PROBLEM	ESTIMATED WASTE QUANTITY	MAJOR COMPONENETS OF SELECTED REMEDY	STANDARDS/ GOALS	ESTIMATED CAPITAL COSTS ($)	ANNUAL O&M COSTS ($)
05	A&F Materials-Greenup, IL	11/23/83	IRM	GW and soil contaminated with organics including PCBs, metals, and inorganics	Not provided	Removal and offsite disposal of contaminated tank liquids and drum wastes; and temporary capping of lagoons	Not provided	111,000	Not provided
05	A&F Materials Company, IL	06/14/85	2nd	Soil and SW contaminated with organics including PCBs, and metals	Not provided	Removal and offsite disposal of all contaminated soil; cleaning and removal of onsite equipment and buildings; soil testing beneath the building with disposal if above recommended action levels; site grading; and removal of site fencing	Soil >1 mg/kg PCBs will be removed. Other Action Levels for key contaminants include benzene 1 ug/gm, toluene 12 ug/gm, trichloroethylene 1 ug/gm, chromium 80 ug/gm, and cadmium 5 ug/gm	824,000	Not provided
05	A&F Materials, IL	08/14/86	3rd - Final	GW contaminated with VOCs including TCE, inorganics, and metals	Not provided	GW monitoring with installation of additional monitoring wells; and institutional controls	Not provided	PRP responsibility	PRP responsibility
05	Acme Solvents, IL	09/27/85	1st	GW and soil contaminated with organics including PCBs, VOCs including TCE, and inorganics	Not provided	Provision for interim alternate water supply system by installation of home carbon treatment units; and excavation and offsite disposal of non-incinerable wastes and incineration of other waste materials and soils	Not provided	To be determined	To be determined

FY82-FY86 RECORD OF DECISION SUMMARY TABLE

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05	Arcanum Iron & Metal, OH	09/26/86	1st - Final	GW, SW, soil, and sediments contaminated with inorganics including lead, antimony, and arsenic	Onsite soils with >500 mg/kg lead, 20,000 yd^3; battery casing chips, 3,800 yd^3; offsite soils not specified	Excavation and offsite disposal of soil with >500 mg/kg lead; excavation and onsite disposal of soil with lead between background and 500 mg/kg; removal of battery casings; conduction of treatability studies and onsite landfilling; and deed restrictions on land and aquifer usage	Soil cleanup goals based on CDC Acceptable Daily Intake levels including offsite disposal of lead >500 mg/kg and onsite disposal of lead between background and 500 mg/kg. Excavation of offsite soils will be conducted until background levels are reached	9,929,000	37,000
05	Arrowhead Refinery, MN	09/30/86	1st - Final	GW, SW, soil, and sediments contaminated with VOCs, organics including PAHs, and metals including lead	4,600 yd^3 (sludge) 20,500 yd^3 (soil and sediments)	Excavation and onsite incineration of contaminated soil, sediments, and sludge; GW pump and treatment; and extension of municipal water supply system to affected residents	Soils and sediments will be excavated and treated to achieve a 10^{-6} excess cancer risk level. GW treatment will also achieve the 10^{-6} level	22,000,000	130,000 - 180,000
05	Berlin & Farro, MI	02/29/84	1st	SW, soil, and air contaminated with VOCs, and organics including PCBs	Not provided	Excavation of contaminated landfill, drum, and soil areas; separation of PCB and non-PCB wastes with offsite disposal; offsite incineration of liquid wastes and landfilling of solid wastes; and backfilling or capping of site	Not provided	Not provided	Not provi

FY82-FY86 RECORD OF DECISION SUMMARY TABLE

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05	Burlington Northern, MN	06/04/86	1st - Final	GW and soil contaminated with organics	9,500 yd^3	Excavation and onsite aerobic breakdown and transformation of contaminated soils and sludges; and onsite RCRA capping	Possible goals are to achieve detoxification of soils as defined by the microtox test and achieve total PAH and benzene extractable concentrations in the treatment zone equal to or less than concentrations present in the soil left in place	582,000	36,000
05	Burrows Sanitation, MI	09/30/86	1st - Final	GW, SW, soil, and sediments contaminated with metals and inorganics including cyanide	250 yd^3	Excavation, solidification/ fixation, and offsite disposal of metal hydroxide sludges; and GW pump and treatment	GW cleanup based on current lowest regulated concentrations for each indicator chemical. Criteria will be taken from the SDWA, Acceptable Chronic Intake Levels, and Health Advisories. Soil cleanup will be based on the site-specific Endangerment Assessment	1,256,700 - 1,335,400 (depending on distance to offsite RCRA facility)	115,000

FY82-FY86 RECORD OF DECISION SUMMARY TABLE

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05	Byron/Johnson Salvage, IL	03/13/85	1st	Soil contaminated with VOCs, organics including PCBs, and metals including lead and arsenic	Not provided	Excavation and offsite disposal of drums; offsite RCRA disposal of EP toxic soils and, if possible, incineration or treatment of liquids; and in-situ treatment of cyanide contaminated soil	Remedy consists of treatment of soil that exceeds 100 times the drinking water standard, and onsite treatment of soil containing 71 mg/kg amenable cyanide	1,170,919	6,000
05	Byron/Johnson Salvage Yard, IL	09/23/86	2nd	GW contaminated with VOCs including TCE, metals, and inorganics including cyanide	Not provided	Provision of home carbon treatment units and bottled water as an interim alternate water supply	Remedy will comply with 10^{-6} cancer risk levels for suspected carcinogens	115,500	165,300
05	Cemetery Dump, MI	09/11/85	1st	GW and soil contaminated with VOCs, and organics including PCBs	Not provided	Excavation and offsite RCRA disposal of 250 drums	Not provided	1,883,261	Not provide
05	Charlevoix, MI	06/12/84	IRM	GW contaminated with VOCs including TCE and PCE	Not provided	Provision for a permanent alternate water supply	Not provided	1,954,000	118,000
05	Charlevoix, MI	09/30/85	2nd - Final	GW contaminated with VOCs including TCE and PCE	Not provided	Plume discharge to Lake Michigan under natural flow conditions; long-term plume monitoring; and institutional controls on private well installation	Under natural flow conditions, TCE and PCE will meet 0.008 ug/l and 0.01 ug/l, respectively	0	17,000

FY82-FY86 RECORD OF DECISION SUMMARY TABLE

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05	Chem-Dyne, OH	07/05/85	1st - Final	GW and soil contaminated with VOCs, organics including PCBs, and metals	Not provided	GW pump and treatment; demolition of onsite buildings; removal of selected soil; and RCRA capping	GW will be treated to <100 ug/l total VOCs to meet background levels, or 10^{-6} cancer risk level	11,600,000	597,000
05	Cross Brothers, IL	03/25/85	IRM	Soil contaminated with VOCs	Not provided	Excavation and offsite disposal of surficial and buried waste materials, and visibly contaminated soil	Not provided	377,728	0
05	Eau Claire, WI	06/10/85	IRM	GW contaminated with VOCs including PCE	11,200,000 gal/day	GW treatment using air stripping with discharge to municipal water treatment plant and distribution system	Aeration treatment will remove 99.6% 1,1-dichloroethene from GW	1,420,000	195,000
05	Fields Brook, OH	09/30/86	1st	Brook sediments contaminated with VOCs including TCE and PCE, organics including PCBs, and metals	36,000 yd^3 16,000 yd^3	Excavation, solidification, and onsite disposal of contaminated sediments Excavation and thermal treatment of contaminated sediments with onsite disposal of residuals	Sediments will be excavated to a 10^{-6} excess cancer risk or to 50 mg/kg PCBs, whichever is greater	35,100,000	72,000
05	Forest Waste, MI	02/29/84	IRM	Soil contaminated with organics including PCBs	Not provided	Fencing	Not provided	100,000	0
05	Forest Waste, MI	06/30/86	1st	Soils and sediments contaminated with organics and metals	4,000 yd^3 110,000 gal	Excavation of sludges and sediments and removal of aqueous lagoon wastes with solidification and offsite RCRA disposal	Cleanup levels will achieve an ingestion rate of 0.1g/day of soil for a 70 kg adult	1,295,000	0

FY82-FY86 RECORD OF DECISION SUMMARY TABLE

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05	Kummer Landfill, MN	06/12/85	1st	GW contaminated with VOCs	Not provided	Provision for an alternate water supply	Remedy will reduce cancer threat to $<10^{-6}$ risk level	1,624,850	28,440
05	Lake Sandy Jo, IN	09/26/86	1st - Final	SW, soils, and sediments contaminated with VOCs, organics including PAHs, and metals	2,500 yd^3	Soil capping; alternate water supply; onsite consolidation of sediments; and institutional controls including deed restrictions on aquifer usage	Sediments with contaminants above the 10^{-6} risk level will be excavated and consolidated	4,747,000	63,000
05	LaSalle Electrical, IL	08/29/86	1st	Offsite soils contaminated with VOCs, and organics including PCBs	25,530 yd^3	Excavation and onsite incineration of offsite soils	Excavation and incineration of soils with greater than 5 mg/kg PCBs in the first 12 inches of soil and greater than 10 mg/kg in soils at depths below 12 inches	26,400,000 (present worth)	0
05	Laskin Poplar Oil, OH	08/09/84	1st	SW and soil contaminated with VOCs, and organics including PCBs and PAHs	Not provided	Incineration of contaminated waste oil; and treatment of contaminated waste water	Not provided	1,043,000	0
05	LeHillier/Mankato, MN	09/27/85	1st - Final	GW and soil contaminated with VOCs including TCE	Not provided	GW pump and treatment using air stripping; extension of LeHillier water supply system to affected areas; and abandonment of contaminated wells	The goal of plume extraction and treatment is consistent with the 10^{-6} cancer risk concentration for TCE 2.8 ug/l	800,000	70,000

FY82-FY86 RECORD OF DECISION SUMMARY TABLE

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05	Main Street, IN	08/02/85	1st	GW contaminated with VOCs including TCE and PCE	Not provided	GW treatment using air stripping with discharge to water treatment system and drinking water distribution system	The air stripping system is designed to achieve a 99.1% removal of TCE, 88.9% removal of PCE, and 96.7% removal of 1,1-DCE	1,106,000	158,000
05	Metamora Landfill, MI	09/30/86	1st	GW and soil contaminated with VOCs including TCE and PCE, and metals	18,150 yd^3	Excavation and offsite thermal destruction of wastes from areas 1 and 4	GW and soil cleanup targets will be established in the FY88 RI/FS	41,500,000 (present worth)	0
05	Morris Arsenic, MN	08/07/85	1st - Final	None	None	No further action	Not provided	0	0
05	New Brighton, NN (Interim Water Treatment)	06/24/83	IRM	GW contaminated with VOCs including TCE	Not provided	Interim GW treatment using granular activated carbon and air stripping	Not provided	150,400	30,526
05	New Brighton, MN (Water Supply System)	09/19/83	IRM	GW contaminated with VOCs including TCE	Not provided	Extension of existing public water supply system to affected residents	Not provided	217,958	Not provide
05	New Brighton, MN (Water Supply System)	08/02/84	IRM	GW contaminated with VOCs	Not provided	Extension of existing public water supply system to replace contaminated municipal system	Not provided	142,090	Not provide
05	New Brighton/ Arden Hills/ St. Anthony, MN	06/30/86	4th	GW contaminated with VOCs including TCE and PCE, and organics	Not provided	Provision of alternate water supply through well construction	Not provided	600,500	22,820

163

FY82-FY86 RECORD OF DECISION SUMMARY TABLE

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05	New Lyme Landfill, OH	09/27/85	1st - Final	GW, soil, and sediments contaminated with VOCs, organics, and inorganics including asbestos	Not provided	Capping; installation and operation of extraction/containment wells to dewater landfill and eliminate leachate; onsite GW and leachate treatment using biological disc, sodium hydroxide precipitation, and granular activated carbon; onsite consolidation of contaminated sediment; and fencing	Not provided	10,798,000	44,000
05	Northernaire, MI	09/11/85	1st	GW, soil, and sewer sediments contaminated with metals including chromium and cadmium	Not provided	Excavation and offsite disposal of soil and sewer line to privately-owned RCRA facility; cleaning dust and hazardous residue from building floor; breaking up of 300 ft^2 of floor and drywell, sampling soil, excavation, and disposal of any contaminated debris and soil at a RCRA Subtitle C facility; and backfilling of area with clean soil	Excavation of soils and sediments will meet response objectives of chromium 50 mg/kg and cadmium 10 mg/kg	75,000	0
05	Novaco Industries, MI	06/27/86	1st	GW contaminated with metals including chromium	36,000,000 gal	GW pump and treatment using electrochemical reduction, precipitation, filtration, and ion exchange with discharge to creek; and GW extraction from the sand/gravel aquifer	Treatment will remove hexavalent chromium from the GW to concentrations below 50 ug/l and trivalent chromium concentrations to below 100 ug/l	560,000	419,000 (years 1-6

FY82-FY86 RECORD OF DECISION SUMMARY TABLE

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05	Old Mill, OH	08/07/85	1st - Final	GW and soil contaminated with VOCs and organics including PCBs	Not provided	Removal and offsite disposal of 95 percent of soil contaminants; GW extraction and treatment using grandular activated carbon; aquifer use restrictions; and provision of public water supply to residences potentially affected	Soils contaminated with base/neutral compounds will be removed to background, and VOC removal will be to the 10^{-6} cancer risk level. GW cleanup has been proposed to meet the 10^{-5} risk level	3,917,000	45,000
05	Outboard Marine Corp., IL	05/15/84	1st	GW, soil, and river sediments contaminated with VOCs, and organics including PCBs	Not provided	Excavation and offsite disposal of PCB contaminated materials; construction of onsite containment cell for moderately contaminated PCB material; capping; GW diversion; construction of clay-lined dewatering lagoon; and treatment of supernatant with discharge to harbor	Not provided	21,570,000 (present worth)	Not provided
05	Reilly Tar, MN	06/06/84	1st	GW contaminated with VOCs and organics including PAHs	Not provided	GW treatment using granular activated carbon	Not provided	750,000	188,000
05	Reilly Tar & Chemical, MN	05/30/86	2nd	GW and soils contaminated with VOCs and organics including PAHs	800,000 - 1,000,000 yd^3	GW pump and treatment; capping and filling of exposed wastes; and discharge of hazardous waste to sewer	Drinking water criteria for PAHs were developed through State and EPA consultations	Cost estimates not fully developed	Cost estimates not fully developed

FY82-FY86 RECORD OF DECISION SUMMARY TABLE

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05	Schmalz Dump, WI	08/13/85	1st	Soil contaminated with VOCs, organics including PCBs, and metals including chromium	3,500 yd^3	Excavation and offsite disposal of contaminated building debris and sediments with dewatering	PCBs will be removed in the dewatering process to below 0.5 ug/kg	2,088,300	0
05	Seymour, IN	09/30/86	1st	GW and soil contaminated with VOCs, organics, and metals	101,690,000 gals	GW extraction and treatment with discharge to POTW	Water discharge will conform with POTW standards	300,000	100,000
05	Spiegelberg Landfill, MI	09/30/86	1st	GW and soils contaminated with VOCs, organics, and metals	5,000 yd^3 10,000 yd^3	Excavation of waste materials with offsite incineration of liquid paint sludges and offsite disposal of solid paint sludges	Excavation of all materials exceeding a 10^{-6} excess cancer risk	15,771,000 - 18,395,000	0
05	Verona Well Field, MI	05/01/84	IRM	GW and air contaminated with VOCs including TCE and PCE	Not provided	Provision for new wells; implementation of barrier system; treatment of purge water using air stripping system; and treatment of air emissions using activated carbon adsorption	Not provided	1,796,000	470,000
05	Verona Well Field, MI	08/12/85	2nd	GW and soil contaminated with VOCs including TCE and PCE	Not provided	Soil treatment using enhanced volatilization; and GW pump and treatment using existing air stripper	It is estimated that within 3 years, GW contamination will decrease to 100 ug/l VOCs	1,660,000	90,000 (years 1- 46,000 (years 3-

FY82-FY86 RECORD OF DECISION SUMMARY TABLE

REGION	SITE NAME, ST	ROD SIG DATE	OPERABLE UNIT	THREAT/ PROBLEM	ESTIMATED WASTE QUANTITY	MAJOR COMPONENETS OF SELECTED REMEDY	STANDARDS/ GOALS	ESTIMATED CAPITAL COSTS ($)	ANNUAL O&M COSTS ($)
05	Wauconda Sand & Gravel, IL	09/30/85	1st	GW, SW, and soil contaminated with VOCs, organics including PCBs, and metals	Not provided	Installation of leachate collection drains; provision for leachate disposal at sewage treatment plant or at an offsite hazardous waste treatment facility; regrading with clean soil cover and revegetation of bare and eroded areas; and fencing	Not provided	1,600,000	50,000
05	Bayou Bonfouca, LA	08/15/85	1st	GW, soil, and sediments contaminated with creosote	Not provided	Offsite disposal of creosote waste	Not provided	903,000	173,743
06	Bio-Ecology Systems, TX	06/06/84	1st - Final	Soil and SW contaminated with VOCs including TCE, organics including PCBs, and metals	Not provided	Construction of onsite disposal cell with synthetic liner, leachate collection system, and final cover; stabilization of waste and onsite placement in cell; elevation of site above 100-year flood plain; and fencing	Not provided	3,709,600	20,000
06	Cecil Lindsey, AR	04/23/86	1st - Final	None	Not provided	No further action with site access restrictions and GW monitoring	Not provided	61,000	10,000
06	Crystal Chemical, TX	09/17/85	NOD					2,078,000	63,000
06	Geneva Industries, TX	09/18/86	1st - Final	GW and soils contaminated with VOCs including TCE, and organics including PAHs and PCBs	22,500 yd^3	Excavation and offsite disposal of contaminated soil and drums; capping; and GW pump and treatment using carbon adsorption with discharge to adjacent flood control channel	Soil will be excavated to PCBs 100 mg/kg. GW will be treated to below TCE 1 ug/l	14,990,000	532,000 (years 1-2) 483,000 (years 3-30)

FY82-FY86 RECORD OF DECISION SUMMARY TABLE

REGION	SITE NAME, ST	ROD SIG DATE	OPERABLE UNIT	THREAT/ PROBLEM	ESTIMATED WASTE QUANTITY	MAJOR COMPONENETS OF SELECTED REMEDY	STANDARDS/ GOALS	ESTIMATED CAPITAL COSTS ($)	ANNUAL O&M COSTS ($)
06	Highlands Acid Pit, TX	06/25/84	1st	GW, soil, and sludge contaminated with VOCs, organics, and metals	Not provided	Excavation and offsite disposal of waste material; backfilling and seeding; and fencing	Not provided	2,407,000	14,100
06	MOTCO, TX	03/15/85	1st	Soil and SW contaminated with organics including PCBs	Not provided	Offsite biological treatment of contaminated pit water; offsite TSCA incineration of organic liquids; and offsite RCRA disposal of sludges/tars and soils	Not provided	42,300,000	Not provid
06	Odessa Chromium I, TX	09/08/86	1st	GW contaminated with metals including chromium	Not provided	Negotiating agreements with Odessa City to extend water supply; and construction of water distribution system	Not provided	247,920	14,350
06	Odessa Chromium II, TX	09/08/86	1st	GW contaminated with metals including chromium	Not provided	Extension of municipal water service to affected areas	Not provided	476,570	51,375
06	Old Inger, LA	09/25/84	1st - Final	GW and soil contaminated with VOCs, pesticides, and metals	Not provided	Onsite land treatment of heavily contaminated soil and sludges; onsite containment and capping of slightly contaminated soils; closing and sealing ungrouted onsite well; GW pump and treatment; and fluid treatment with offsite discharge	Not provided	3,174,000	10,000

FY82-FY86 RECORD OF DECISION SUMMARY TABLE

REGION	SITE NAME, ST	ROD SIG DATE	OPERABLE UNIT	THREAT/ PROBLEM	ESTIMATED WASTE QUANTITY	MAJOR COMPONENETS OF SELECTED REMEDY	STANDARDS/ GOALS	ESTIMATED CAPITAL COSTS ($)	ANNUAL O&M COSTS ($)
06	Sikes Disposal Pits, TX	09/18/86	1st - Final	GW, soil, and SW contaminated with VOCs and organics	150,000 yd^3	Excavation and onsite incineration of sludges and soils with onsite disposal of residual ash; banning usage of onsite upper aquifer during natural attenuation; and SW treatment, as necessary, with discharge to river	Soil and sludges will be excavated to 10 mg/kg VOCs. The upper aquifer will be attenuated to 10^{-5} Human Health Criteria	102,217,000	41,000
06	South Valley, NM	03/22/85	IRM	GW contaminated with organics	Not provided	Installation of a new water supply well	New water supply will meet the 10^{-6} cancer risk level by attaining 1,1-dichloroethane 0.25 ug/l, trichloroethene 2.8 ug/l, and tetrachloroethene 0.9 ug/l	775,000	12,000
06	Tar Creek, OK	06/06/84	1st - Final	GW, SW, and sediments contaminated with acidic waste water, metals, and organics	Not provided	Diversion and diking at two major inflow areas; and plugging of 66 wells	Not provided	400,000	5,000
06	Triangle Chemical, TX	06/11/85	1st - Final	Soil contaminated with VOCs	Not provided	Incineration and deep well injection of the tank and drum contents; mechanical aeration of contaminated soils; decontamination of all onsite structures; and offsite disposal of trash and debris	Soil will be aerated to background levels	385,000	500

FY82-FY86 RECORD OF DECISION SUMMARY TABLE

REGION	SITE NAME, ST	ROD SIG DATE	OPERABLE UNIT	THREAT/ PROBLEM	ESTIMATED WASTE QUANTITY	MAJOR COMPONENETS OF SELECTED REMEDY	STANDARDS/ GOALS	ESTIMATED CAPITAL COSTS ($)	ANNUAL O&M COSTS ($)
06	United Creosoting Site, TX	09/30/86	1st	Soils contaminated with VOCs, organics including PCP and PAHs, and inorganics including creosote	84,000 yd^3	Demolition and purchasing of 6 homes with provision for permanent relocation of residents; onsite consolidation of surface soil with temporary capping; excavation and disposal of PAH contaminated soils at appropriate facility or treatment, if available; backfilling and covering; and natural GW attenuation	Excavation and disposal of all soils contaminated above PAH 100 mg/kg	Undeveloped	43,000 (interim closure period)
07	Aidex, IA	08/24/83	IRM	GW and soil contaminated with VOCs and pesticides	Not provided	Offsite disposal of bulk liquids and semi-solids by deep well injection; and onsite drainage control	Not provided	3,580,175 (present worth)	Not provid
07	Aidex, IA	09/30/84	2nd - Final	GW and soil contaminated with VOCs and pesticides	Not provided	Excavation and offsite disposal of buried wastes and contaminated soil; backfilling, grading, and seeding of the site; expansion of the monitoring well network and biannual GW testing; and vacuuming and washing, interior surfaces, floors, and walls of the onsite building	Not provided	3,455,175	875,000

FY82-FY86 RECORD OF DECISION SUMMARY TABLE

REGION	SITE NAME, ST	ROD SIG DATE	OPERABLE UNIT	THREAT/ PROBLEM	ESTIMATED WASTE QUANTITY	MAJOR COMPONENETS OF SELECTED REMEDY	STANDARDS/ GOALS	ESTIMATED CAPITAL COSTS ($)	ANNUAL O&M COSTS ($)
07	Des Moines TCE, IA	07/21/86	1st	GW contaminated with VOCs including TCE, and organics	Not provided	GW pump and treatment with discharge to SW	Extraction and treatment will continue until maximum TCE concentration in monitoring wells is 5 ug/l or less, for 4 consecutive months	1,196,000	63,000
07	Ellisville, MO	07/10/85	1st	Soil and SW contaminated with VOCs, organics, and pesticides	Not provided	Callahan Property: stabilization and erosion control; removal and disposal of plastic cover and cover's hold-down blocks; removal and salvaging of the barbed-wire and chain link fences; and gravel removal	Not provided	12,000	Not provide
						Rosalie Property: excavation and offsite disposal of contaminated soil, drums, cans, and other debris; and soil testing and analysis	Not provided	52,000	Not provide
07	Ellisville, MO	09/29/86	2nd	Soil contaminated with VOCs, dioxins, and metals	Not provided	Excavation and onsite interim storage of dioxin contaminated soil; and excavation, transportation, and offsite land disposal of soils containing nondioxin waste	Not provided	20,200,000 (present worth)	Not provide

FY82-FY86 RECORD OF DECISION SUMMARY TABLE

REGION	SITE NAME, ST	ROD SIG DATE	OPERABLE UNIT	THREAT/ PROBLEM	ESTIMATED WASTE QUANTITY	MAJOR COMPONENETS OF SELECTED REMEDY	STANDARDS/ GOALS	ESTIMATED CAPITAL COSTS ($)	ANNUAL O&M COSTS ($)
07	Times Beach, MO (Interim Storage Facility)	0[illegible]/13/8[illegible]	1st	Soil contaminated with dioxin	Not provided	Transportation of highly contaminated soil from other sites for storage in an onsite interim storage facility (to be constructed); and restoration of other sites by excavation and temporary relocation of affected residents	Not provided	16,734,000	Not provid
08	Denver Radium Site Streets, CO	03/24/86	1st	Asphalt contaminated with radium	30,500 yd^3	Temporary leaving of contaminated material in place; institutional controls; and routine maintenance	Remedy meets standards for "Remedial Action at Inactive Uranium Processing Sites"	30,000	Variable
08	Denver Radium/ ROBCO, CO	09/30/86	2nd	Soil and buildings contaminated with radium	7,000 yd^3 (soil) 200 yd^3 (demolished buildings)	Excavation and offsite disposal of contaminated soils and debris; or Excavation, stabilization and temporary onsite consolidation of contaminated soils	Remedy meets standards for "Remedial Action at Inactive Uranium Processing Sites"	1,912,406	6,000
08	Libby Ground Water, MT	09/26/86	1st	Soil and GW contaminated with inorganics including creosote, and organics	Not provided	Alternate water supply; and institutional controls prohibiting well usage	Not provided	PRP responsibility	PRP re- sponsibili

FY82-FY86 RECORD OF DECISION SUMMARY TABLE

REGION	SITE NAME, ST	ROD SIG DATE	OPERABLE UNIT	THREAT/ PROBLEM	ESTIMATED WASTE QUANTITY	MAJOR COMPONENETS OF SELECTED REMEDY	STANDARDS/ GOALS	ESTIMATED CAPITAL COSTS ($)	ANNUAL O&M COSTS ($)
08	Marshall Landfill, CO	09/26/86	1st - Final	GW and SW contaminated with VOCs including TCE and PCE, organics, and metals	Not provided	Installation of a subsurface collection system; GW treatment using sedimentation, air stripping, and off-gas carbon adsorption; regrading and revegetating; and fencing	Contaminated water will be treated to achieve removal of benzene 0, TCE 0, cadmium 0.6 mg/l, and lead 4 mg/l	1,819,000	152,000
08	Milltown, MT	04/14/84	1st	GW and soil contaminated with metals including arsenic	Not provided	Construction of a new well and distribution system; and flushing and testing residential plumbing systems	GW will be treated to EPA drinking water standards for arsenic 0.050 mg/l	262,714	4,238
08	Milltown, MT	08/07/85	2nd	GW and soil contaminated with metals including arsenic	Not provided	Replacement of household water supply appurtenances; and on-going testing of residential plumbing systems	Not provided	Not provided	Not provided
08	North Dakota Arsenic Trioxide, ND	09/26/86	1st - Final	GW contaminated with metals including arsenic	Not provided	Expansion and hook-up of homes to GW treatment and distribution system; and evaluation of possible institutional controls	Water supplied for domestic and agricultural purposes will attain the MCL for arsenic 25 ug/l	2,212,600	57,400
08	Smuggler Mountain, CO	09/26/86	1st	GW and soil contaminated with cadmium and metals including lead	410,000 yd^3	Excavation and permanent onsite RCRA disposal of soils; soil capping; and alternate water supply	Excavation and onsite isolation of soil with lead greater than 5,000 mg/kg. Soils between 1,000-5,000 mg/kg will be covered with 6-12 inches of topsoil. GW will be monitored to comply with SDWA Standards	1,816,550	30,900

FY82-FY86 RECORD OF DECISION SUMMARY TABLE

REGION	SITE NAME, ST	ROD SIG DATE	OPERABLE UNIT	THREAT/ PROBLEM	ESTIMATED WASTE QUANTITY	MAJOR COMPONENETS OF SELECTED REMEDY	STANDARDS/ GOALS	ESTIMATED CAPITAL COSTS ($)	ANNUAL O&M COSTS ($)
08	Union Pacific Railroad, WY	09/26/86	1st	GW and soil contaminated with organics including PCBs, and inorganics including creosote	Greater than 700,000 yd^3	Rechanneling of river; GW pump and treatment with carbon adsorptiun with discharge to river; and slurry wall barrier construction	Not provided	7,000,000	57,000
08	Woodbury Chemical, CO	07/19/85	1st	GW, soil, and sediments contaminated with pesticides, metals, and organics	Not provided	Excavaton, offsite transportation, and incineration of highly contaminated rubble and soil with disposal of residual ash; and backfilling with clean soil, regrading, and revegetation	Contaminated soils will be treated to 3 mg/kg and contaminated rubble to total pesticides 100 mg/kg	2,450,000	21,000
09	Celtor Chemical Works, CA	10/04/83	IRM	GW, SW, and soil contaminated with metals and mining waste	Not provided	Offsite transportation and disposal of tailing piles and contaminated soil; and conduction of RI/FS	Not provided	340,000	Not provid
09	Celtor Chemical, CA	09/30/85	2nd - Final	SW and soil contaminated with metals including cadmium and arsenic	Not provided	Excavation and RCRA offsite disposal of contaminated soils	Action levels for soil will be based on National Water Quality Criteria. SW and GW will be based on MCLs or DWRs. River criteria will be based on standards for the protection of aquatic life	3,065,338	7,000

FY82-FY86 RECORD OF DECISION SUMMARY TABLE

REGION	SITE NAME, ST	ROD SIG DATE	OPERABLE UNIT	THREAT/ PROBLEM	ESTIMATED WASTE QUANTITY	MAJOR COMPONENETS OF SELECTED REMEDY	STANDARDS/ GOALS	ESTIMATED CAPITAL COSTS ($)	ANNUAL O&M COSTS ($)
09	Del Norte, CA	09/30/85	1st - Final	GW and soil contaminated with VOCs, pesticides, and metals including chromium	700 yd^3	Excavation and removal of soil; GW treatment with discharge to POTW; and disposal of chromium-rich waste brine to RCRA facility	Cleanup levels will meet the 10^{-6} cancer risk level and MCLs under SDWA	1,240,000	0
09	Iron Mountain, CA	10/03/86	1st	SW runoff from mountain contaminated with acid mine drainage consisting of sulfuric acid and metals; fish and sediment are also affected	2.5 acres (to be capped)	Capping of selected cracked and caved ground areas; and dam enlargement	Cleanup program will be designed to meet EPA Water Quality Criteria for Protection of Aquatic Life for the "worst case" condition of 1978	68,100,000 (fund-balanced cost)	4,100,000 (present worth)
09	Jibboom Junkyard, CA	05/09/85	1st - Final	Soil contaminated with VOCs, metals including lead, zinc, and copper, and organics including PCBs	Not provided	Excavation and offsite disposal of contaminated soils	Soils containing lead above 500 mg/kg will be excavated	1,460,000	Not provided
09	McColl Site, CA	04/11/84	1st	Soil contaminated with VOCs and inorganics including sulfur dioxide, hydrogen sulfide, and arsenic	Not provided	Excavation and offsite disposal of wastes and soil	Not provided	21,500,000	0

FY82-FY86 RECORD OF DECISION SUMMARY TABLE

REGION	SITE NAME, ST	ROD SIG DATE	OPERABLE UNIT	THREAT/ PROBLEM	ESTIMATED WASTE QUANTITY	MAJOR COMPONENETS OF SELECTED REMEDY	STANDARDS/ GOALS	ESTIMATED CAPITAL COSTS ($)	ANNUAL O&M COSTS ($)
09	Mountain View/ Globe, AZ	06/02/83	1st - Final	Soil contaminated with asbestos	Not provided	Permanent relocation of residents; onsite burial of containerized mobile homes; and fencing	Not provided	4,432,000	0
09	San Gabriel/ Area I, CA	05/11/84	IRM	GW contaminated with VOCs including TCE and PCE	Not provided	GW pump and treatment using air stripping; and conduction of RI/FS	Not provided	525,000	38,000
09	Stringfellow Acid Pits, CA	07/22/83	IRM	GW, SW, and soil contaminated with metals and organics	Not provided	Fencing; cap maintenance; and offsite leachate disposal	Not provided	2,406,000 (present worth)	Not provide
09	Stringfellow Acid Pits, CA	07/17/84	2nd	GW contaminated with pesticides, metals, and organics	Not provided	GW pump and treatment with offsite discharge to POTW	Not provided	9,189,000	1,724,000
09	Taputimu Farm/Insular Terratories, AS	12/27/83	1st - Final	Air contaminated with VOCs and organics including PCBs and pesticides	Not provided	Repacking of chemical/pesticide materials stored onsite; decontamination and sealing of onsite storage facilities; and transportation of all waste materials to mainland for offsite disposal	Not provided	0	0
10	Ponders Corner, WA	06/01/84	IRM	GW contaminated with VOCs and organics	Not provided	GW treatment using air stripping; and conduction of RI/FS	Not provided	1,163,000	82,000

FY82-FY86 RECORD OF DECISION SUMMARY TABLE

REGION	SITE NAME, ST	ROD SIG DATE	OPERABLE UNIT	THREAT/ PROBLEM	ESTIMATED WASTE QUANTITY	MAJOR COMPONENETS OF SELECTED REMEDY	STANDARDS/ GOALS	ESTIMATED CAPITAL COSTS ($)	ANNUAL O&M COSTS ($)
10	Ponders Corners, WA	09/30/85	2nd	GW and soil contaminated with VOCs including TCE and PCE	Not provided	Continued operation of H1-H2 treatment system; installation of variable-frequency controllers on well pump motors to reduce energy requirements; changing of fan drives on treatment tower; installation of new monitoriong wells, upgrading of existing wells, and continued sampling and analysis of aquifer; excavation and offsite disposal of septic tanks and drain field piping; and placement of administrative restrictions on excavation of soil and installation and usage of wells	The remedy will meet the recommended occupational air levels for VOCs which are based on OSHA Standards	334,970	82,000
10	Queen City Farms, WA	10/24/85	1st	SW, soil, and sediments contaminated with VOCs including TCE, organics including PCBs, and metals including chromium and lead	22,000 yd^3	Excavation, stabilization, and offsite disposal of sludges, sediments, and soils; and capping	Not provided	3,439,000	PRP responsibility
10	South Tacoma Channel Well 12A, WA	03/18/83	IRM	GW contaminated with VOCs including TCE	Not provided	GW pump and treatment using air stripping	Not provided	1,200,000	60,000

FY82-FY86 RECORD OF DECISION SUMMARY TABLE

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10	South Tacoma Channel Well 12A, WA	05/03/85	2nd	GW and soil contaminated with VOCs including TCE and PCE	Not provided	Continue operation of IRM; construction of a GW treatment system; excavation and offsite disposal of contaminated soil with soil flushing; and maintenance of institutional controls	Specific GW cleanup goals have not been established. Attainment of the 10^{-6} risk range has been recommended	1,590,000	50,000
10	Toftdahl Drums, WA	09/30/86	1st - Final	None	Not provided	No further action with GW monitoring	Not provided	0	0
10	United Chrome, OR	09/12/86	1st - Final	GW and soil contaminated with metals including chromium	350 tons (offsite disposal)	Excavation and offsite disposal of soils; flushing of soils above shallow GW table; and GW pump and treatment using chemical reduction and precipitation with discharge to POTW or SW	The chromium cleanup criteria for the confined aquifer is 0.05 mg/l and 10 mg/l for the unconfined zone. A treatment effluent concentration of 0.3 to 0.4 mg/l chromium is expected to be maintained	1,580,000	261,000

178

FY82-FY86 RECORD OF DECISION SUMMARY TABLE

REGION	SITE NAME, ST	ROD SIG DATE	OPERABLE UNIT	THREAT/ PROBLEM	ESTIMATED WASTE QUANTITY	MAJOR COMPONENETS OF SELECTED REMEDY	STANDARDS/ GOALS	ESTIMATED CAPITAL COSTS ($)	ANNUAL O&M COSTS ($)
10	Western Processing, WA	08/05/84	1st	GW and soil contaminated with VOCs including TCE, inorganics including cyanide, pesticides, and metals including arsenic and cadmium	Not provided	Removal and offsite disposal/incineration of all bulk liquids, drummed liquids, waste piles, and other debris; removal and proper disposal of all transformers and substation equipment; demolition and offsite disposal of all onsite buildings; dismantling of all onsite bulk storage tanks; controlling and treatment of stormwater; and onsite and perimeter monitoring of air quality	Not provided	5,000,000	Not provid

FY82-FY86 RECORD OF DECISION SUMMARY TABLE

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10	Western Processing, WA	09/25/85	2nd	GW, SW, soil, and creek sediments contaminated with VOCs, organics including PCBs and PAHs, and metals	Not provided	Soil sampling and analysis of onsite and offsite areas; excavation and offsite disposal of selected soils and non-soil materials; excavation or cleaning and plugging all utility and process lines in Area I; GW extraction and treatment; stormwater control; excavation and onsite disposal of selected soils; excavation of utility lines; cleaning utility manholes and vaults; capping; performing bench scale testing of soil solidification technique; and excavation of Mill Creek sediments; and performing supplemental remedial planning studies if GW contamination migrates	All soils contaminated with PCBs over 2 mg/kg and hot spots exceeding 10^{-5} risk level will be excavated. Aquatic organisms will be protected through MCL or ACL goals	18,100,000	2,000,000

SECTION V

RECORDS OF DECISION

KEY WORD LIST: FY 1982 - 1987

The ROD Key Word List presents the RODs approved from FY 1982 - 1987 by major key word categories and subcategories. The key words are a compilation of those identified for each site in the ROD abstracts found at the beginning of this document. The first two pages of this list provide an index of all key words and subcategories. The following text lists those RODs associated with each key word.

RECORD OF DECISION KEY WORD LIST INDEX

Listed below are major key word categories and their subcategories for Superfund Records of Decision (RODs).

Primary Hazardous Substances Detected

Acids
Arsenic
Asbestos
Benzene
Carcinogenic Compounds
Chromium
Dioxin
Inorganics
Lead
Metals
Mining Wastes
Oils
Organics/VOCs
PAHs
PCBs
PCE
Pesticides
Phenols
Radioactive Materials
Sludge
Solvents
Synfuels
TCE
Toluene

Contaminated Media

Air
Debris
Ground Water
Sediments (Creek/River/
  Stream)
Sludge
Soil
Surface Water

Public Health and Environmental Threats

Direct Contact
Public Exposure

Remedy Selection

Consent Decree
Deed Restriction
Fund Balancing
Interim Remedy
No Action Remedy
O&M
ROD Addendum

Water Supply

Alternate Water Supply
Drinking Water
  Contaminants

Site Specific Characteristics

Flood Plain
Seismic
Sole-Source Aquifer
Subsidence

Standard/Regulations Permits/Guidance

- ARARs
  - MCLs
  - MCLGs
  - Action-Specific
  - Chemical-Specific
  - Location-Specific
- Clean Air Act
- Clean Water Act
- Drinking Water Standards
- Institutional Controls
- Public Health Advisory
- RCRA
- RCRA Closure Requirements
  - Alternate Closure
  - Clean Closure
  - Landfill Closure

RECORD OF DECISION KEY WORD LIST INDEX
(continued)

Standard/Regulations Permits/Guidance
(Continued)

RCRA Landfill Specifications
RCRA Locational Requirements
Safe Drinking Water Act
State Criteria/Guidance/Advisories
State Permit
Toxic Substances Control Act
Water Quality Criteria

Testing/Pilot Studies

Leachability Tests
Treatability Studies

Technology

Aeration
Air Monitoring
Air Stripping
Capping
Containment
Decontamination
Dredging
Excavation
Filling
Granular Activated Carbon
Ground Water Monitoring
Ground Water Treatment
Incineration
Land Treatment
Leachate Collection/Treatment

Technology
(Continued)

Levees
Offsite Discharge
Offsite Disposal
Offsite Treatment
Onsite Containment
Onsite Discharge
Onsite Disposal
Onsite Treatment
Plume Management
Publicly Owned Treatment Works (POTW)
Relocation
Slurry Wall
Soil Washing/Flushing
Solidification
Stabilization
Surface Water Diversion/Collection
Surface Water Monitoring
Temporary Storage
Treatment Technology
Venting

Miscellaneous

Municipally-Owned Site
Wetlands
Woodlands

Historically Significant

ACL
Background Levels
Deferred Decision
Temporary Remedial Measure

SUPERFUND RECORDS OF DECISION:
KEY WORD LIST

Listed below are major key word categories and their subcategories for Superfund Records of Decision (RODs). Opposite each of these categories is a broad sampling of sites whose ROD contains the listed key word. Some categories may become obsolete or new categories may develop over time due to changes in the focus of the Superfund remedy selection process. The Superfund managers in each Region have copies of all RODs.

KEY WORDS (By Category)	**ASSOCIATED ROD SITES**
Primary Hazardous Substances Detected	**Site, State (Region)**
Acids	Charles George, MA (I)*; Davis Liquid Waste, RI (I); Nyanza Chemical, MA (I); Western Sand & Gravel, RI (I); Chemical Control, NJ (II); PAS Oswego, NY (II); Bruin Lagoon, PA (III); Douglassville, PA (III); Lackawanna Refuse Site, PA (III); A&F Materials-IRM, IL (V); Chem-Dyne-EDD, OH (V); Forest Waste, MI (V)*; Northside Sanitary Landfill/ Environmental Conservation and Chemical Corporation, IN (V); Highlands Acid Pit, TX (VI); Tar Creek, OK (VI); Conservation Chemical, MO (VII); Celtor Chemical Works, CA (IX); Iron Mountain Mines, CA (IX); Stringfellow Acid Pits, CA (IX)*; Queen City Farms-IRM/EDD WA (X); Western Processing, WA (X)
Arsenic	Hocomonco Pond, MA (I); Industri-plex, MA (I); Nyanza Chemical, MA (I); Chemical Control, NJ (II); D'Imperio Property, NJ (II); Helen Kramer, NJ (II); Lipari Landfill, NJ (II)*; Love Canal, NY (II); Sinclair Refinery, NY (II); Spence Farm, NJ (II); Syncon Resins, NJ (II); Volney Landfill, NY (II); Chisman Creek, VA (III); Douglassville, PA (III); McAdoo-IRM, PA (III); Moyer Landfill, PA (III); American Creosote, FL (IV); Davie Landfill, FL (IV); Geiger (C&M Oil), SC (IV); Newport Dump, KY (IV); Palmetto Wood Preserving, SC (IV); Pepper's Steel-EDD, FL (IV); Sapp Battery, FL (IV); Tower Chemical, FL (IV); Whitehouse Waste Oil Pits, FL (IV); Arcanum Iron & Metal, OH (V); Byron/Johnson Salvage Yard, IL (V); Chem-Dyne-EDD, OH (V); Johns-Manville, IL (V); Morris Arsenic, MN (V); New Brighton (TCAAP), MN (V)*; Crystal City Airport, TX (VI); Highlands Acid Pit, TX (VI)*; Mid-South Wood, AR (VI); Arsenic Trioxide, ND (VIII); Central City/Clear Creek, CO (VIII); Milltown, MT (VIII); Milltown-S, MT (VIII); Celtor Chemical, CA (IX)*; Litchfield Airport, AZ (IX); McColl, CA (IX); Western Processing, WA (X)

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* Subsequent Record of Decision
S Supplemental Record of Decision
EDD Enforcement Decision Document

Primary Hazardous Substances Detected (continued)	Site, State (Region)
Asbestos	West Virginia Ordnance, WV (III); Johns-Manville, IL (V); New Lyme, OH (V); Mountain View/Globe, AZ (IX)
Benzene	Davis Liquid Waste, RI (I); Haviland Complex, NY (II); Vega Alta, PR (II); Volney Landfill, NY (II); Kane and Lombard, MD (III); Liquid Disposal, MI (V); New Brighton (TCAAP), MN (V)*; Northside Sanitary Landfill/Environmental Conservation and Chemical Corporation, IN (V); Seymour, IN (V)*; Highlands Acid Pits, TX (VI)*; Operating Industries, CA (IX)
Carcinogenic Compounds	Charles George, MA (I); Davis Liquid Waste, RI (I); Hocomonco Pond, MA (I); Re-Solve, MA (I)*; Diamond Alkali, NJ (II); Katonah Municipal Well, NY (II); Metaltec/Aerosystems, NJ (II); Montgomery Township, NJ (II); Taylor Borough, PA (III); Geiger (C&M Oil), SC (IV); Hollingsworth, FL (IV); Powersville Landfill, GA (IV); Liquid Disposal, MI (V); New Brighton (TCAAP), MN (V)*; Northside Sanitary Landfill/ Environmental Conservation and Chemical Corporation, IN (V); Reilly Tar, MN (V); Hardage/Criner, OK (VI); Conservation Chemical, MO (VII); Rocky Mountain Arsenal, CO (VIII); Litchfield Airport, AZ (IX); San Fernando Area I, CA (IX); San Gabriel Area I, CA (IX); Stringfellow Acid Pits, CA (IX); Colbert Landfill, WA (X); Queen City Farms-IRM/EDD, WA (X)
Chromium	Hocomonco Pond, MA (I); Industri-plex, MA (I); Nyanza Chemical, MA (I); D'Imperio Property, NJ (II); Haviland Complex, NY (II); Lang Property, NJ (II); Lipari Landfill, NJ (II)*; Sinclair Refinery, NY (II); Spence Farm, NJ (II); Syncon Resins, NJ (II); Waldick Aerospace, NJ (II); Douglassville, PA (III); Limestone Road, MD (III); Matthews Electroplating, VA (III); McAdoo-IRM, PA (III); Davie Landfill, FL (IV); Geiger (C&M Oil), SC (IV); Newport Dump, KY (IV); Palmetto Wood Preserving, SC (IV); Pepper's Steel-EDD, FL (IV); Powersville Landfill, GA (IV); Tower Chemical, FL (IV); Whitehouse Waste Oil Pits, FL (IV); Burrows Sanitation, MI (V); Johns-Manville, IL (V); New Brighton (TCAAP), MN (V)*; Northernaire, MI (V); Novaco Industries, MI (V); Schmalz Dump, WI (V); Schmaltz Dump, WI (V)*; Wauconda Sand & Gravel, IL (V); Mid-South Wood, AR (VI); Hardage/Criner, OK (VI); Highlands Acid Pit, TX (VI)*; Odessa Chromium I, TX (VI); Odessa Chromium II, TX (VI); Central City/Clear Creek, CO (VIII); Del Norte, CA (IX); Litchfield Airport, AZ (IX); Stringfellow Acid Pits,

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* Subsequent Record of Decision
S Supplemental Record of Decision
EDD Enforcement Decision Document

Primary Hazardous Substances Detected (continued)	Site, State (Region)
Chromium (continued)	CA (IX); Queen City Farms-IRM/EDD, WA (X); United Chrome, OR (X); Western Processing, WA (X)*
Dioxin	Baird & McGuire, MA (I); Diamond Alkali, NJ (II); Hyde Park-EDD, NY (II); Love Canal, NY (II); Conservation Chemical, MO (VII); Ellisville MO (VII); Ellisville Site Area, MO (VII)*;Times Beach, MO (VII)
Inorganics	Auburn Road, NH (I); Davis Liquid Waste, RI (I); Hocomonco Pond, MA (I); Nyanza Chemical, MA (I); Picillo Farm, RI (I); Sylvester, NH (I); Bog Creek Farm, NJ (II); Caldwell Trucking, NJ (II); Chemical Control, NJ (II); D'Imperio Property, NJ (II); Florence Landfill, NJ (II); Friedman Property, NJ (II); GEMS Landfill, NJ (II); Helen Kramer, NJ (II); Krysowaty Farm, NJ (II); Love Canal, NY (II); Price Landfill, NJ (II)*; Sharkey Landfill, NJ (II); Sinclair Refinery, NY (II); Army Creek Landfill, DE (III); Bruin Lagoon, PA (III)*; Chisman Creek, VA (III); Douglassville, PA (III); Drake Chemical, PA (III); Harvey-Knott, DE (III); Leetown Pesticide, WV (III); Limestone Road, MD (III); McAdoo-IRM, PA (III); Palmerton Zinc, PA (III); Wade, PA (III); Distler Brickyard, KY (IV); Gallaway Ponds, TN (IV); Hipps Road Landfill, FL (IV); Newport Dump, KY (IV); Pioneer Sand, FL (IV); SCRDI Dixiana, SC (IV); A. L. Taylor, KY (IV); Tower Chemical, FL (IV); A&F Materials-IRM, IL (V); A&F Materials-EDD, IL (V)*; Acme Solvents, IL (V); Burrows Sanitation, MI (V); Cemetery Dump, MI (V); Chem-Dyne-EDD, OH (V); Forest Waste, MI (V)*; Industrial Excess Landfill, OH (V); Johns-Manville, IL (V); Lake Sandy Jo, IN (V); Liquid Disposal, MI (V); Northside Sanitary Landfill/Environmental Conservation and Chemical Corporation, IN (V); Reilly Tar, MN (V); Rose Township, MI (V); Wauconda Sand & Gravel, IL (V); Cecil Lindsey, AR (VI); Hardage/Criner, OK (VI); Mid-South Wood, AR (VI); MOTCO, TX (VI); Tar Creek, OK (VI); Ellisville, MO (VII); Libby Ground Water, MT (VIII); Iron Mountain Mine, CA (IX); Stringfellow Acid Pits, CA (IX)
Lead	Davis Liquid Waste, RI (I); Palmerton Zinc, PA (III); Powersville Landfill, GA (IV); Johns-Manville, IL (V); Laskin/Poplar, OH (V)*; Gurley Pit, AR (VI); Stringfellow Acid Pits, CA (IX)
Metals	Auburn Road, NH (I); Baird & McGuire, MA (I); Cannon/Plymouth, MA (I); Charles George, MA (I)*; Davis Liquid Waste, RI (I); Hocomonco Pond, MA (I); Keefe

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* Subsequent Record of Decision
S Supplemental Record of Decision
EDD Enforcement Decision Document

Primary Hazardous Substances Detected (continued)	Site, State (Region)
Metals (continued)	Environmental, NH (I); Nyanza Chemical, MA (I); Ottati & Goss/Great Lakes, NH (I); Re-Solve, MA (I); Sylvester, NH (I); Bog Creek Farm, NJ (II); Burnt Fly Bog, NJ (II); Caldwell Trucking, NJ (II); Chemical Control, NJ (II); Chemical Control, NJ (II)*; D'Imperio Property, NJ (II); Florence Landfill, NJ (II); GEMS Landfill, NJ (II); Haviland Complex, NY (II); Lang Property, NJ (II); Lipari Landfill, NJ (II)*; Lone Pine Landfill, NJ (II); Marathon Battery, NY (II); Metaltec/Aerosystems, NJ (II); PAS Oswego, NY (II); Pijak Farm, NJ (II); Renora Inc., NJ (II); Sharkey Landfill, NJ (II); Sinclair Refinery, NJ (II); Syncon Resins, NJ (II); Volney Landfill, NY (II); Waldick Aerospace, NJ (II); Army Creek Landfill, DE (III); Blosenski Landfill, PA (III); Bruin Lagoon, PA (III)*; Chisman Creek, VA (III); Enterprise Avenue, PA (III); Harvey-Knott, DE (III); Kane & Lombard, MD (III); McAdoo-IRM, PA (III); Millcreek, PA (III); Moyer Landfill, PA (III); Palmerton Zinc, PA (III); Saltville Waste Disposal Ponds, VA (III); Sand, Gravel & Stone, MD (III); Wade, PA (III); A. L. Taylor, KY (IV); American Creosote, FL (IV); Distler Brickyard, KY (IV); Geiger (C&M Oil), SC (IV); Hipps Road Landfill, FL (IV); Hollingsworth, FL (IV); Miami Drum Services, FL (IV); Palmetto Wood Preserving, SC (IV); Pepper's Steel-EDD, FL (IV); Pioneer Sand, FL (IV); Powersville Landfill, GA (IV); Sapp Battery, FL (IV); Tower Chemical, FL (IV); A&F Materials-IRM, IL (V); A&F Materials-EDD, IL (V)*; Arcanum Iron & Metal, OH (V); Burrows Sanitation, MI (V); Byron Salvage Yard, IL (V)*; Byron/Johnson Salvage Yard, IL (V); Forest Waste, MI (V)*; Lake Sandy Jo, IN (V); Laskin/Poplar Oil, OH (V); Marion/Bragg Landfill, IN (V); New Brighton (TCAAP), MN (V)*; Northside Sanitary Landfill/Environmental Conservation and Chemical Corporation, IN (V); Schmalz Dump, WI (V); Schmalz Dump, WI (V)*; Seymour, IN (V); Wauconda Sand & Gravel, IL (V); Bio-Ecology Systems, TX (VI); Cleve Reber, LA (VI); Crystal City Airport, TX (VI); Gurley Pit, AR (VI); Hardage/Criner, OK (VI); Highlands Acid Pit, TX (VI); Highlands Acid Pit, TX (VI)*; Johns-Manville, IL (VI); Odessa Chromium I, TX (VI); Old Inger, LA (VI); MOTCO, TX (VI); Tar Creek, OK (VI); Conservation Chemical, MO (VII); Central City/Clear Creek, CO (VIII); Libby Ground Water, MT (VIII); Marshall Landfill, CO (VIII); Milltown, MT (VIII); Milltown-S, MT (VIII); Smuggler Mountain, CO (VIII); Union Pacific, WY (VIII); Woodbury Chemical, CO (VIII); Celtor Chemical Works, CA (IX); Celtor Chemical, CA (IX)*; Iron Mountain

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* Subsequent Record of Decision
S Supplemental Record of Decision
EDD Enforcement Decision Document

Primary Hazardous Substances Detected (continued)	**Site, State (Region)**
Metals (continued)	Mine, CA (IX); Jibboom Junkyard, CA (IX); Stringfellow Acid Pits-IRM, CA (IX); Stringfellow Acid Pits, CA (IX)*; Queen City Farms-IRM/EDD, WA (X); United Chrome, OR (X); Western Processing, WA (X); Western Processing, WA (X)*
Mining Wastes	Tar Creek, OK (VI); Milltown, MT (VIII); Smuggler Mountain, CO (VIII); Celtor Chemical Works, CA (IX); Iron Mountain Mine, CA (IX)
Oils	Davis Liquid Waste, RI (I); McKin, ME (I)*; Bridgeport, NJ (II); Burnt Fly Bog, NJ (II); Pijak Farm, NJ (II); Price Landfill, NJ (II); Bruin Lagoon, PA (III); Bruin Lagoon, PA (III)*; Enterprise Avenue, PA (III); Coleman Evans, FL (IV); Geiger (C&M Oil), SC (IV); Miami Drum Services, FL (IV); Mowbray Engineering, AL (IV); A&F Materials-IRM, IL (V); Forest Waste-IRM, MI (V); Forest Waste, MI (V)*; Laskin/Poplar Oil, OH (V); Laskin/Poplar Oil, OH (V)*; New Lyme, OH (V); Northside Sanitary Landfill/Environmental Conservation and Chemical Corporation, IN (V); Old Mill, OH (V); Outboard Marine Corp., IL (V); Reilly Tar, MN (V); Geneva Industries, TX (VI); Gurley Pit, AR (VI); Mid-South Wood, AR (VI); Old Inger, LA (VI); Ellisville, MO (VII); Union Pacific, WY (VIII); Western Processing, WA (X)
Organics/VOCs	Auburn Road, NH (I); Baird & McGuire, MA (I); Beacon Heights, CT (I); Charles George, MA (I); Davis Liquid Waste, RI (I); Hocomonco Pond, MA (I); Industri-plex, MA (I); Keefe Environmental, NH (I); Kellogg-Deering Well Field, CT (I); McKin-IRM, ME (I); Nyanza Chemical, MA (I); Ottati and Goss/Great Lakes, NH (I); Picillo Farm, RI (I); Re-Solve, MA (I); Re-Solve, MA (I)*; Sylvester, NH (I); Tinkham Garage, NH (I); Western Sand & Gravel, RI (I); Winthrop Landfill-EDD, ME (I); Bog Creek Farm, NJ (II); Brewster Well Field, NY (II); Bridgeport, NJ (II); Burnt Fly Bog, NJ (II); Caldwell Trucking, NJ (II); Chemical Control, NJ (II); Chemical Control, NJ (II)*; Combe Fill North Landfill, NJ (II); Combe Fill South Landfill, NJ (II); Diamond Alkali, NJ (II); D'Imperio Property, NJ (II); Endicott Village Well Field, NY (II); Florence Landfill,NJ (II); Friedman Property, NJ (II); GE Moreau, NY (II); GEMS Landfill, NJ (II); Goose Farm, NJ (II); Haviland Complex, NY (II); Helen Kramer, NJ (II); Hyde Park-EDD, NY (II); Kentucky Avenue Wellfield, NY (II); Lang Property, NJ (II); Lipari Landfill, NJ (II); Lipari Landfill, NJ (II)*; Lone Pine Landfill, NJ (II); Love Canal, NY (II); Metaltec/Aerosystems, NJ (II); Montgomery Township, NJ

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* Subsequent Record of Decision
S Supplemental Record of Decision
EDD Enforcement Decision Document

Primary Hazardous Substances Detected (continued)	Site, State (Region)
Organics/VOCs (continued)	(II); Olean Well Field, NY (II); PAS Oswego, NY (II); Pijak Farm, NJ (II); Price Landfill, NJ (II)*; Renora Inc., NJ (II); Sharkey Landfill, NJ (II); Sinclair Refinery, NY (II); Suffern Village Well Field, NY (II); Swope Oil, NJ (II); Syncon Resins, NJ (II); Vega Alta, PR (II); Vestal, NY (II); Volney Landfill, NY (II); Waldick Aerospace, NJ (II); Williams Property, NJ (II); Army Creek Landfill, DE (III); Blosenski Landfill, PA (III); Bruin Lagoon, PA (III)*; Douglassville, PA (III); Drake Chemical, PA (III); Harvey-Knott, DE (III); Industrial Lane, PA (III); Kane & Lombard, MD (III); Leetown Pesticide, WV (III); Limestone Road, MD (III); McAdoo-IRM, PA (III); Millcreek, PA (III); Moyer Landfill, PA (III); Sand, Gravel & Stone, MD (III); Taylor Borough, PA (III); Tybouts Corner, DE (III); Tyson's Dump, PA (III); Wade, PA (III); West Virginia Ordnance Works, WV (III); A. L. Taylor, KY (IV); American Creosote, FL (IV); Biscayne Aquifer Sites, FL (IV); Coleman Evans, FL (IV); Distler Brickyard, KY (IV); Distler Farm, KY (IV); Gallaway Ponds, TN (IV); Geiger (C&M Oil), SC (IV); Hipps Road Landfill, FL (IV); Hollingsworth, FL (IV); Newport Dump Site, KY (IV); Pepper's Steel-EDD, FL (IV); Pioneer Sand, FL (IV); Powerville Landfill, GA (IV); SCRDI Dixiana, SC (IV); Sodyeco, NC (IV); Tower Chemical, FL (IV); A&F Materials-IRM, IL (V); A&F Materials-EDD, IL (V)*; Acme Solvents, IL (V); Arrowhead Refinery, MN (V); Berlin & Farro, MI (V); Byron/Johnson Salvage Yard, IL (V); Byron Salvage Yard, IL (V)*; Cemetery Dump, MI (V); Charlevoix, MI (V); Charlevoix, MI (V)*; Chem-Dyne-EDD, OH (V); Eau Claire-IRM, WI (V); FMC Corporation, MN (V)*; Industrial Excess Landfill, OH (V); Kummer Landfill, MN (V); Laskin/Poplar Oil, OH (V)*; Liquid Disposal, MI (V); Main Street Wellfield, IN (V); Marion/Bragg Landfill, IN (V); New Brighton/St. Anthony-IRM, MN (V); New Brighton/Arden Hills/St. Anthony, MN (V)*; New Brighton-Interim Water Treatment, MN (V)*; New Brighton (TCAPP), MN (V)*; New Brighton-Water Supply System, MN (V)*; New Lyme, OH (V); Northside Sanitary Landfill/Environmental Conservation and Chemical Corporation, IN (V); Old Mill OH (V); Reilly Tar & Chemical, MN (V)*; Rose Township, MI (V); Seymour, IN (V); Seymour, IN (V)*; Verona Well Field-IRM, MI (V); Verona Well Field, MI (V)*; Wauconda Sand & Gravel, IL (V); Bayou Sorrel, LA (VI); Cecil Lindsey, AR (VI); Cleve Reber, LA (VI); Geneva Industries, TX (VI); Gurley Pit, AR (VI); Hardage/Criner, OK (VI); Highlands Acid Pit, TX (VI); Highlands Acid Pit, TX (VI)*; MOTCO, TX (VI); Old Inger, LA (VI); Petro-Chemical Systems, TX (VI); Sikes Disposal Pits,

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* Subsequent Record of Decision

S Supplemental Record of Decision

EDD Enforcement Decision Document

Primary Hazardous Substances Detected (continued)	Site, State (Region)
Organics/VOCs (continued)	TX (VI); South Valley-IRM, NM (VI); Triangle Chemical, TX (VI); Aidex-IRM, IA (VII); Aidex, IA (VII)*; Conservation Chemical, MO (VII); Des Moines TCE, IA (VII); Ellisville, MO (VII); Ellisville Site Area, MO (VII)*; Libby Ground Water, MT (VIII); Marshall Landfill, CO (VIII); Rocky Mountain Arsenal, CO (VIII); Union Pacific, WY (VIII); Woodbury Chemical, CO (VIII); Del Norte, CA (IX); McColl, CA (IX); Stringfellow Acid Pits-IRM, CA (IX); Litchfield Airport, AZ (IX); Operating Industries, CA (IX); San Fernando Area I, CA (IX); San Gabriel Area I, CA (IX); Stringfellow Acid Pits, CA (IX); Stringfellow Acid Pits, CA (IX)*; Colbert Landfill, WA (X); Ponders Corner-IRM, WA (X); Queen City Farms-IRM/EDD, WA (X); South Tacoma, WA (X); South Tacoma Channel-Well 12A, WA (X)*; Western Processing, WA (X); Western Processing, WA (X)*
PAHs (Polynuclear Aromatic Hydrocarbons)	Baird & McGuire, MA (I); Cannon/Plymouth, MA (I); Caldwell Trucking, NJ (II); Renora Inc., NJ (II); Douglassville, PA (III); Kane & Lombard, MD (III); Millcreek, PA (III); Taylor Borough, PA (III); Westline Site, PA (III); A. L. Taylor, KY (IV); American Creosote, FL (IV); Geiger (C&M Oil), SC (IV); SCRDI Dixiana, SC (IV); Sodyeco, NC (IV); Whitehouse Waste Oil Pits, FL (IV); Arrowhead Refinery, MN (V); Laskin/Poplar Oil, OH (V)*; Northside Sanitary Landfill/Environmental Conservation and Chemical Corporation, IN (V); Lake Sandy Jo, IN (V); Laskin/Poplar Oil, OH (V); Reilly Tar, MN (V); Reilly Tar & Chemical, MN (V)*; Rose Township, MI (V); Bayou Bonfouca, LA (VI)*; Geneva Industries, TX (VI); Mid-South Wood, AR (VI); Petro-Chemical Systems, TX (VI); United Creosoting, TX (VI); Libby Ground Water, MT (VIII); Western Processing, WA (X)*
PCBs (Polychlorinated Biphenyls)	Ottati & Goss/Great Lakes, NH (I); Picillo Farm, RI (I); Re-Solve, MA (I)*; Tinkham Garage, NH (I); Bridgeport, NJ (II); Burnt Fly Bog, NJ (II); Caldwell Trucking, NJ (II); Chemical Control, NJ (II); GE Moreau, NY (II); Goose Farm, NJ (II); Hudson River, NY (II); Hyde Park-EDD, NY (II); Krysowaty Farm, NJ (II); Pijak Farm, NJ (II); Renora Inc., NJ (II); Sinclair Refinery, NY (II); Swope Oil, NJ (II); Syncon Resins, NJ (II); Wide Beach, NY (II); Douglassville, PA (III); Harvey-Knott, DE (III); Kane & Lombard, MD (III); Lehigh Electric, PA (III); Millcreek, PA (III); Geiger (C&M Oil), SC (IV); Mowbray Engineering, AL (IV); Newport Dump Site, KY (IV); Pepper's Steel-EDD, FL (IV); SCRDI Dixiana, SC (IV); A&F Materials-IRM, IL (V); A&F Materials-EDD, IL

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* Subsequent Record of Decision

S Supplemental Record of Decision

EDD Enforcement Decision Document

Primary Hazardous Substances Detected (continued)	Site, State (Region)
PCBs (Polychlorinated Biphenyls) (continued)	(V); Acme Solvents, IL (V); Berlin & Farro, MI (V); Byron/Johnson Salvage Yard, IL (V); Chem-Dyne-EDD, OH (V); Forest Waste-IRM, MI (V); Forest Waste, MI (V)*; LaSalle Electrical, IL (V); Laskin/Poplar Oil, OH (V); Laskin/Poplar Oil, OH (V)*; Liquid Disposal, MI (V); Northside Sanitary Landfill/ Environmental Conservation and Chemical Corporation, IN (V); Old Mill, OH (V); Outboard Marine Corp., IL (V); Rose Township, MI (V); Schmalz Dump, WI (V); Bio-Ecology Systems, TX (VI); Geneva Industries, TX (VI); Gurley Pit, AR, (VI); MOTCO, TX (VI); Jibboom Junkyard, CA (IX); Taputimu Farm, AS (IX); Queen City Farms-IRM/EDD, WA (X); Western Processing, WA (X)*
PCE (Tetrachloroethylene/ Perchloroethylene)	Keefe Environmental, NH (I); Picillo Farm, RI (I); Brewster Well Field, NY (II); Caldwell Trucking, NJ (II); Combe Fill South Landfill, NJ (II); Katonah Municipal Well, NY (II); Metaltec/Aerosystems, NJ (II); Renora Inc., NJ (II); Rockaway Borough Wellfield, NJ (II); Vega Alta, PR (II); Waldick Aerospace, NJ (II); Williams Property, NJ (II); Fischer & Porter, PA (III); A. L. Taylor, KY (IV); SCRDI Dixiana, SC (IV); Byron Salvage Yard, IL (V)*; Charlevoix, MI (V); Charlevoix, MI (V)*; FMC Corporation, MN (V)*; Liquid Disposal, MI (V); Main Street Wellfield, IN (V); New Brighton/Arden Hills/St. Anthony, MN (V)*; Verona Well Field-IRM, MI (V); Verona Well Field, MI (V)*; Geneva Industries, TX (VI); Hardage/Criner, OK (VI); Marshall Landfill, CO (VIII); Rocky Mountain Arsenal, CO (VIII); San Fernando Area I, CA (IX); San Gabriel Area I, CA (IX); Colbert Landfill, WA (X); Ponders Corner, WA (X)*; Queen City Farms-IRM/EDD, WA (X); South Tacoma Channel-Well 12A, WA (X)*
Pesticides	Baird & McGuire, MA (I); Cannon/Plymouth MA (I); Davis Liquid Waste, RI (I); Ottati & Goss/Great Lakes, NH (I); Chemical Control, NJ (II); Chemical Control, NJ (II)*; Diamond Alkali, NJ (II); Krysowaty Farm, NJ (II); Lone Pine Landfill, NJ (II); Love Canal, NY (II); Pijak Farm, NJ (II); Renora, Inc., NJ (II); Syncon Resins, NJ (II); Douglassville, PA (III); Drake Chemical, PA (III); Leetown Pesticide, WV (III); Gallaway Ponds, TN (IV); Miami Drum Services, FL (IV); Powersville Landfill, GA (IV); SCRDI Dixiana, SC (IV); Tower Chemical, FL (IV); Chem-Dyne-EDD, OH (V); Liquid Disposal, MI (V); Northside Sanitary Landfill/Environmental Conservation and Chemical Corporation, IN (V); Bayou Sorrel, LA (VI); Crystal City Airport, TX (VI); Hardage/Criner, OK (VI); Old Inger, LA

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* Subsequent Record of Decision
S Supplemental Record of Decision
EDD Enforcement Decision Document

Primary Hazardous Substances Detected (continued)	Site, State (Region)
Pesticides (continued)	(VI); Aidex-IRM, IA (VII); Ellisville, MO (VII); Woodbury Chemical, CO (VIII); Del Norte, CA (IX); Stringfellow Acid Pits-IRM, CA (IX); Stringfellow Acid Pits, CA (IX)*; Taputimu Farm, AS (IX); Western Processing, WA (X)
Phenols	Davis Liquid Waste, RI (I); Hocomonco Pond, MA (I); Picillo Farm, RI (I); Goose Farm, NJ (II); Helen Kramer, NJ (II); Hyde Park-EDD, NY (II); Lipari Landfill, NJ (II); Lipari Landfill, NJ (II)*; Love Canal, NY (II); Pijak Farm, NJ (II); Sinclair Refinery, NY (II); Douglassville, PA (III); Millcreek, PA (III); Sand, Gravel & Stone, MD (III); Westline, PA (III); Coleman Evans, FL (IV); Whitehouse Waste Oil Pits, FL (IV); Laskin/Poplar Oil, OH (V); Reilly Tar & Chemical, MN (V)*; Geneva Industries, TX (VI); Sikes Disposal Pits, TX (VI); Conservation Chemical, MO (VII); Conservation Chemical, MO (VII); Ellisville, MO (VII); Queen City Farms-IRM/EDD, WA (X); Western Processing, WA (X)*
Radioactive Materials	Lansdowne Radiation, PA (III); Lansdowne Radiation, PA (III)*; Moyer Landfill, PA (III); Denver Radium Site Streets, CO (VIII); Denver Radium III, CO (VIII)*; Denver Radium/11th & Umatilla, CO (VIII)*; Denver Radium/12th & Quivas, CO (VIII)*; Denver Radium/Card Property, CO (VIII)*; Denver Radium/Open Space, CO (VIII)*; Denver Radium ROBCO, CO (VIII)*
Sludge	Davis Liquid Waste, RI (I); Tinkham Garage, NH (I); Bridgeport, NJ (II); Florence Landfill, NJ (II); GE Moreau, NY (II); Price Landfill, NJ (II); Price Landfill, NJ (II)*; Swope Oil, NJ (II); Bruin Lagoon, PA (III); Bruin Lagoon, PA (III)*; Enterprise Avenue, PA (III); Lackawanna Refuse Site, PA (III); McAdoo Associates, PA (III)*; Davie Landfill, FL (IV); Pioneer Sand, FL (IV); Berlin & Farro, MI (V); Burrows Sanitation, MI (V); Forest Waste-IRM, MI (V); Forest Waste, MI (V)*; Laskin/Poplar Oil, OH (V); Laskin/Poplar Oil, OH (V)*; Liquid Disposal, MI (V); New Lyme, OH (V); Cleve Reber, LA (VI); Gurley Pitt-EDD, AK (VI); Highlands Acid Pit, TX (VI); Mid-South Wood Products, AR (VI); MOTCO, TX (VI); Old Inger, LA (VI); Sikes Disposal Pits, TX (VI); Des Moines TCE, IA (VII); Ellisville, MO (VII); McColl, CA (IX)
Solvents	Davis Liquid Waste, RI (I); Keefe Environmental, NH (I); McKin, ME (I)*; Western Sand & Gravel, RI (I); Winthrop Landfill-EDD, ME (I); Burnt Fly Bog, NJ (II); Chemical

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* Subsequent Record of Decision
S Supplemental Record of Decision
EDD Enforcement Decision Document

Primary Hazardous Substances Detected (continued)	Site, State (Region)
Solvents (continued)	Control, NJ (II); Kentucky Avenue Wellfield, NY (II); Krysowaty Farm, NJ (II); Lipari Landfill, NJ (II); Lone Pine Landfill, NJ (II); Spence Farm, NJ (II); Solvents (continued)Vestal, NY (II); Enterprise Avenue, PA (III); Lackawanna Refuse Site, PA (III); McAdoo-IRM, PA (III); McAdoo Associates, PA (III)*; Millcreek, PA (III); Miami Drum Services, FL (IV); A&F Materials-IRM, IL (V); Berlin & Farro, MI (V); Charlevoix, MI (V); Cross Bros., IL (V); New Brighton-Interim Water Treatment, MN (V)*; New Brighton-Water Supply System, MN (V)*; New Lyme, OH (V); Old Mill, OH (V); Verona Well Field, MI (V)*; Bio-Ecology Systems, TX (VI); Old Inger, LA (VI); Conservation Chemical, MO (VII); Ellisville, MO (VII); Litchfield Airport, AZ (IX); Taputimu Farm, AS (IX); Ponders Corner-IRM, WA (X); Ponders Corner, WA (X)*; South Tacoma, WA (X); Western Processing, WA (X)
Synfuels	Western Processing, WA (X)
TCE (Trichloroethylene)	Auburn Road, NH (I); Charles George, MA (I); Davis Liquid Waste, RI (I); Keefe Environmental, NH (I); Kellogg-Deering Well Field, CT (I); McKin-IRM, ME (I); Re-Solve, MA (I)*; Tinkham Garage, NH (I); Western Sand & Gravel, RI (I); Brewster Well Field, NY (II); Caldwell Trucking, NJ (II); Combe Fill South Landfill, NJ (II); D'Imperio Property, NJ (II); Goose Farm, NJ (II); Haviland Complex, NY (II); Lang Property, NJ (II); Metaltec/Aerosystems, NJ (II); Olean Well Field, NY (II); Price Landfill, NJ (II)*; Rockaway Borough Wellfield, NJ (II); Sharkey Landfill, NJ (II); Vega Alta, PR (II); Vestal, NY (II); Waldick Aerospace, NJ (II); Blosenski Landfill, PA (III); Fischer & Porter, PA (III); Heleva Landfill, PA (III); Industrial Lane, PA (III); Limestone Road, MD (III); Millcreek, PA (III); Moyer Landfill, PA (III); Taylor Borough, PA (III); Distler Brickyard, KY (IV); Hollingsworth, FL (IV); A&F Materials-EDD, IL (V); Acme Solvents, IL (V); Byron Salvage Yard, IL (V)*; Charlevoix, MI (V); Charlevoix, MI (V)*; FMC Corporation, MN (V)*; LeHillier/Mankato, MN (V); Liquid Disposal, MI (V); Main Street Wellfield, IN (V); Marion/Bragg Landfill, IN (V); New Brighton/St. Anthony-IRM, MN (V); New Brighton/Arden Hills/St. Anthony, MN (V)*; New Brighton-Interim Water Treatment, MN (V)*; New Brighton (TCAAP), MN (V)*; New Brighton-Water Supply System, MN (V); Northside Sanitary Landfill/Environmental Conservation and Chemical Corporation, IN (V); Seymour, IN (V); Verona Well Field-IRM, MI (V); Verona Well Field, MI

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* Subsequent Record of Decision
S Supplemental Record of Decision
EDD Enforcement Decision Document

Primary Hazardous Substances Detected (continued)	Site, State (Region)
TCE (Trichloroethylene) (continued)	(V)*; Bio-Ecology Systems, TX (VI); Geneva Industries, TX (VI); Hardage/Criner, OK (VI); Des Moines TCE, IA (VII); Marshall Landfill, CO (VII); Rocky Mountain Arsenal, CO (VIII); Operating Industries, CA (IX); San Gabriel/Area I, CA (IX); Litchfield Airport, AZ (IX); San Fernando Area I, CA (IX); Stringfellow Acid Pits, CA (IX); Colbert Landfill, WA (X); Queen City Farms-IRM/EDD, WA (X); South Tacoma, WA (X); South Tacoma Channel-Well 12A, WA (X)*; Western Processing, WA (X)
Toluene	Charles George, MA (I); Industri-plex, MA (I); Winthrop Landfill-EDD, ME (I); Bog Creek Farm, NJ (II); Bridgeport, NJ (II); Combe Fill North Landfill, NJ (II); Combe Fill South Landfill, NJ (II); D'Imperio Property, NJ (II); Goose Farm, NJ (II); Haviland Complex, NY (II); Helen Kramer, NJ (II); Hyde Park-EDD, NY (II); Lang Property, NJ (II); Lipari Landfill, NJ (II); Lipari Landfill, NJ (II)*; Love Canal, NY (II); Sinclair Refinery, NY (II); Blosenski Landfill, PA (III); Kane & Lombard, MD (III); McAdoo-IRM, PA (III); McAdoo Associates, PA (III)*; Moyer Landfill, PA (III); Taylor Borough, PA (III); Tybouts Corner, DE (III); A. L. Taylor, KY (IV); American Creosote, FL (IV); Distler Brickyard, KY (IV); Geiger (C&M Oil), SC (IV); Hipps Road Landfill, FL (IV); Newport Dump Site, KY (IV); FMC Corporation, MN (V); New Brighton (TCAAP), MN (V)*; New Lyme, OH (V); Seymour, IN (V); Verona Well Field, MI (V)*; Sikes Disposal Pits, TX (VI); Triangle Chem., TX (VI); Ellisville, MO (VII); Operating Industries, CA (IX); Queen City Farms-IRM/EDD, WA (X); Western Processing, WA (X)*
Contaminated Media	
Air	McKin-IRM, ME (I); Sylvester, NH (I); Combe Fill South Landfill, NJ (II); Diamond Alkali, NJ (II); GEMS Landfill, NJ (II); Helen Kramer, NJ (II); Love Canal, NY (II); Heleva Landfill, PA (III); Lansdowne Radiation, PA (III)*; Saltville Waste Disposal Ponds, VA (III); Taylor Borough, PA (III); Wade, PA (III); Berlin & Farro, MI (V); Chem-Dyne-EDD, OH (V); Johns-Manville, IL (V); Outboard Marine, IL (V); Verona Well Field-IRM, MI (V); Denver Radium II, CO (VIII)*; Denver Radium III, CO (VIII)*; Denver Radium/12th & Quivas, CO (VIII)*; Denver Radium/Open Space, CO (VIII)*; Mountain View/Globe, AZ (IX); Taputimu Farm, AS (IX); South Tacoma, WA (X)

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* Subsequent Record of Decision
S Supplemental Record of Decision
EDD Enforcement Decision Document

Contaminated Media (continued)	Site, State (Region)
Debris	Chemical Control, NJ (II)*; Waldick Aerospace, NJ (II); Williams Property, NJ (II); Kane & Lombard, MD (III); Tower Chemical, FL (IV); Liquid Disposal, MI (V); Cleve Reber, LA (VI); Denver Radium III, CO (VIII)*; Denver Radium/12th & Quivas, CO (VIII)*; Denver Radium/Card Property, CO (VIII)*; Denver Radium/Open Space, CO (VIII)*
Ground Water	Auburn Road, NH (I); Baird & McGuire, MA (I); Beacon Heights, CT (I); Cannon/Plymouth, MA (I); Charles George, MA (I); Davis Liquid Waste, RI (I); Hocomonco Pond, MA (I); Industri-plex, MA (I); Kellogg-Deering Well Field, CT (I); McKin-IRM, ME (I); Nyanza Chemical, MA (I); Ottati & Goss/ Great Lakes, NH (I); Picillo Farm, RI (I); Re-Solve, MA (I); Re-Solve, MA (I)*; Sylvester, NH (I); Tinkham Garage, NH (I); Western Sand & Gravel, RI (I); Winthrop Landfill-EDD, ME (I); Bog Creek Farm, NJ (II); Brewster Well Field, NY (II); Bridgeport, NJ (II); Burnt Fly Bog, NJ (II); Caldwell Trucking, NJ (II); Chemical Control, NJ (II); Chemical Control, NJ (II)*; Combe Fill North Landfill, NJ (II); Combe Fill South Landfill, NJ (II); Diamond Alkali, NJ (II); D'Imperio Property, NJ (II); Endicott Village Well Field, NY (II); Florence Landfill, NJ (II); Friedman Property, NJ (II); GE Moreau, NY (II); GEMS Landfill, NJ (II); Goose Farm, NJ (II); Haviland Complex, NY (II); Helen Kramer, NJ (II); Hyde Park-EDD, NY (II); Katonah Municipal Well, NY (II); Kentucky Avenue Wellfield, NY (II); Krysowaty Farm, NJ (II); Lang Property, NJ (II); Lipari Landfill, NJ (II); Lipari Landfill, NJ (II)*; Lone Pine Landfill, NJ (II); Metaltec/Aerosystems, NJ (II); Montgomery Township, NJ (II); Olean Well Field, NY (II); PAS Oswego, NY (II); Pijak Farm, NJ (II); Price Landfill, NJ (II); Price Landfill, NJ (II)*; Renora, Inc., NJ (II); Rockaway Borough Wellfield, NJ (II); Sharkey Landfill, NJ (II); Sinclair Refinery, NY (II); Spence Farm, NJ (II); Suffern Village Well Field, NY (II); Swope Oil, NJ (II); Syncon Resins, NJ (II); Vega Alta, PR (II); Vestal, NY (II); Volney Landfill, NY (II); Waldick Aerospace, NJ (II); Williams Property, NJ (II); Army Creek Landfill, DE (III); Blosenski Landfill, PA (III); Bruin Lagoon, PA (III); Bruin Lagoon, PA (III)*; Chisman Creek, VA (III); Douglassville, PA (III); Drake Chemical, PA (III); Fischer & Porter, PA (III); Harvey-Knott, DE (III); Heleva Landfill, PA (III); Industrial Lane, PA (III); Kane & Lombard, MD (III); Limestone Road, MD (III); Matthews Electroplating, VA (III); McAdoo-IRM, PA (III); McAdoo Associates, PA (III)*; Millcreek, PA (III); Moyer Landfill, PA (III); Saltville Waste Disposal Ponds, VA (III); Sand, Gravel & Stone, MD

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* Subsequent Record of Decision
S Supplemental Record of Decision
EDD Enforcement Decision Document

Contaminated Media (continued)	**Site, State (Region)**
Ground Water (continued)	(III); Tybouts Corner, DE (III); Tyson's Dump, PA (III); Wade, PA (III); Westline, PA (III); West Virginia Ordnance Works, WV (III); American Creosote, FL (IV); Biscayne Aquifer Sites, FL (IV); Coleman Evans, FL (IV); Davie Landfill, FL (IV); Distler Brickyard, KY (IV); Geiger (C&M Oil), SC (IV); Hipps Road Landfill, FL (IV); Hollingsworth, FL (IV); Miami Drum Services, FL (IV); Newport Dump Site, KY (IV); Pepper's Steel-EDD, FL (IV); Powersville Landfill, GA (IV); SCRDI Dixiana, SC (IV); Sapp Battery, FL (IV); Sodyeco, NC (IV); Tower Chemical, FL (IV); Varsol Spill Site, FL (IV); Whitehouse Waste Oil Pits, FL (IV); A&F Materials-IRM, IL (V); A&F Materials-EDD, IL (V)*; Acme Solvents, IL (V); Arcanum Iron & Metal, OH (V); Arrowhead Refinery, MN (V); Burrows Sanitation, MI (V); Byron Salvage Yard, IL (V)*; Charlevoix, MI (V); Charlevoix, MI (V)*; Chem-Dyne-EDD, OH (V); Eau Claire-IRM, WI (V); FMC Corporation, MN (V)*; Forest Waste, MI (V)*; Johns-Manville, IL (V); Industrial Excess Landfill, OH (V); Lake Sandy Jo, IN (V); LeHillier/Mankato, MN (V); Liquid Disposal, MI (V); Main Street Well Field, IN (V); Marion/Bragg Landfill, IN (V); New Brighton/St. Anthony-IRM, MN (V); New Brighton/Arden Hills/St. Anthony, MN (V)*; New Brighton-Interim Water Treatment, MN (V)*; New Brighton (TCAAP), MN (V)*; New Brighton-Water Supply System, MN (V)*; New Lyme, OH (V); Northernaire, MI (V); Northside Sanitary Landfill/Environmental Conservation and Chemical Corporation, IN (V); Novaco Industries, MI (V); Old Mill, OH (V); Outboard Marine Corp., IL (V); Reilly Tar, MN (V); Reilly Tar & Chemical, MN (V)*; Rose Township, MI (V); Schmalz Dump, WI (V)*; Seymour, IN (V); Seymour, IN (V)*; Verona Well Field-IRM, MI (V); Verona Well Field, MI (V)*; Wauconda Sand & Gravel, IL (V); Bayou Bonfouca, LA (VI); Bayou Bonfouca, LA (VI)*; Bayou Sorrel, LA (VI); Bio-Ecology Systems, TX (VI); Cecil Lindsey, AR (VI); Cleve Reber, LA (VI); Geneva Industries, TX (VI); Hardage/Criner, OK (VI); Highlands Acid Pit, TX (VI); Highlands Acid Pit, TX (VI)*; Mid-South Wood, AR (VI); MOTCO, TX (VI); Odessa Chromium I, TX (VI); Odessa Chromium II, TX (VI); Old Inger, LA (VI); Sikes Disposal Pits, TX (VI); South Valley-IRM, NM (VI); Tar Creek, OK (VI); United Creosoting, TX (VI); Aidex-IRM, IA (VII); Aidex, IA (VII)*; Conservation Chemical, MO (VII); Des Moines TCE, IA (VII); Arsenic Trioxide, ND (VIII); Central City/Clear Creek, CO (VIII); Libby Ground Water, MT (VIII); Marshall Landfill, CO (VIII); Milltown-S, MT (VIII); Rocky Mountain Arsenal, CO (VIII); Smuggler Mountain, CO (VIII); Union Pacific, WY (VIII); Celtor Chemical Works, CA (IX); Del Norte, CA (IX);

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* Subsequent Record of Decision

S Supplemental Record of Decision

EDD Enforcement Decision Document

Contaminated Media (continued)	Site, State (Region)
Ground Water (continued)	Litchfield Airport, AZ (IX); McColl, CA (IX); San Fernando Area I, CA (IX); San Gabriel Area I, CA (IX); Stringfellow Acid Pits-IRM, CA (IX); Stringfellow Acid Pits, CA (IX)*; Colbert Landfill, WA (X); Ponders Corner-IRM, WA (X); Ponders Corner, WA (X)*; Queen City Farms-IRM/EDD, WA (X); South Tacoma, WA (X); South Tacoma Channel-Well 12A, WA (X)*; United Chrome, OR (X); Western Processing, WA (X); Western Processing, WA (X)*
Sediments (Creek/River/ Stream)	Auburn Road, NH (I); Cannon/Plymouth, MA (I); Davis Liquid Waste, RI (I); Hocomonco Pond, MA (I); Nyanza Chemical, MA (I); Ottati & Goss/Great Lakes, NH (I); Re-Solve, MA (I)*; Tinkham Garage, NH (I); Caldwell Trucking, NJ (II); Chemical Control, NJ (II)*; Combe Fill South Landfill, NJ (II); GEMS Landfill, NJ (II); Haviland Complex, NY (II); Hudson River, NY (II); Love Canal, NY (II); Pijak Farm, NJ (II); Syncon Resins, NJ (II); Wide Beach, NY (II); Army Creek Landfill, DE (III); Bruin Lagoon, PA (III)*; Chisman Creek, VA (III); Douglassville, PA (III); Harvey-Knott, DE (III); Leetown Pesticide, WV (III); Limestone Road, MD (III); Millcreek, PA (III); Saltville Waste Disposal Ponds, VA (III); Sand, Gravel & Stone, MD (III); Tyson's Dump, PA (III); Westline, PA (III); West Virginia Ordnance Works, WV (III); American Creosote, FL (IV); Coleman Evans, FL (IV); Newport Dump Site, KY (IV); Pepper's Steel-EDD, FL (IV); Sapp Battery, FL (IV); Whitehouse Waste Oil Pits, FL (IV); Arcanum Iron & Metal, OH (V); Arrowhead Refinery, MN (V); Burrows Sanitation, MI (V); Fields Brook, OH (V); Forest Waste, MI (V)*; Lake Sandy Jo, IN (V); Northside Sanitary Landfill/Environmental Conservation and Chemical Corporation, IN (V); Outboard Marine Corp., IL (V); Schmalz Dump, WI (V); Seymour, IN (V); Wauconda Sand & Gravel, IL (V); Bayou Bonfouca, LA (VI); Bayou Bonfouca, LA (VI)*; Cecil Lindsey, AR (VI); Cleve Reber, LA (VI); Geneva Industries, TX (VI); Gurley Pit, AR (VI); Sikes Disposal Pits, TX (VI); Denver Radium/Card Property, CO (VIII)*; Milltown, MT (VIII); Woodbury Chemical, CO (VIII); Iron Mountain Mine, CA (IX); Queen City Farms-IRM/EDD, WA (X); Western Processing, WA (X) *Sludge Davis Liquid Waste, RI (I); Hocomonco Pond, MA (I); Industri-plex, MA (I); Nyanza Chemical, MA (I); Bridgeport, NJ (II); Swope Oil, NJ (II); American Creosote, FL (IV); Arrowhead Refinery, MN (V); Berlin & Farro, MI (V); Laskin/Poplar Oil, OH (V)*; Bio-Ecology Systems, TX (VI); Cleve Reber, LA (VI); Gurley Pit, AR (VI); Highlands Acid Pit, TX (VI); Mid-South Wood, AK (VI); Old Inger, LA (VI); Queen City Farms-IRM/EDD, WA (X)

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* Subsequent Record of Decision
S Supplemental Record of Decision
EDD Enforcement Decision Document

Contaminated Media (continued)	Site, State (Region)
Soil	Auburn Road, NH (I); Baird & McGuire, MA (I); Beacon Heights, CT (I); Cannon/Plymouth, MA (I); Davis Liquid Waste, RI (I); Hocomonco Pond, MA (I); Industri-plex, MA (I); Keefe Environmental, NH (I); McKin-IRM, ME (I); Nyanza Chemical, MA (I); Ottati & Goss/Great Lakes, NH (I); Picillo Farm, RI (I); Re-Solve, MA (I); Re-Solve, MA (I)*; Tinkham Garage, NH (I); Western Sand & Gravel, RI (I); Bog Creek Farm, NJ (II); Brewster Well Field, NY (II); Bridgeport, NJ (II); Burnt Fly Bog, NJ (II); Caldwell Trucking, NJ (II); Chemical Control, NJ (II); Chemical Control, NJ (II)*; Combe Fill North Landfill, NJ (II); Combe Fill South Landfill, NJ (II); Diamond Alkali, NJ (II); D'Imperio Property, NJ (II); Florence Landfill, NJ (II); GE Moreau, NY (II); GEMS Landfill, NJ (II); Goose Farm, NJ (II); Helen Kramer, NJ (II); Hyde Park-EDD, NY (II); Krysowaty Farm, NJ (II); Lang Property, NJ (II); Lipari Landfill, NJ (II); Lipari Landfill, NJ (II)*; Lone Pine Landfill, NJ (II); Love Canal, NY (II); Metaltec/Aerosystems, NJ (II); PAS Oswego, NY (II); Pijak Farm, NJ (II); Price Landfill, NJ (II); Renora Inc., NJ (II); Sharkey Landfill, NJ (II); Sinclair Refinery, NY (II); Spence Farm, NJ (II); Swope Oil, NJ (II); Syncon Resins, NJ (II); Vestal, NY (II); Waldick Aerospace, NJ (II); Wide Beach, NY (II); Williams Property, NJ (II); Army Creek Landfill, DE (III); Blosenski Landfill, PA (III); Bruin Lagoon, PA (III); Douglassville, PA (III); Drake Chemical, PA (III); Harvey-Knott, DE (III); Enterprise Avenue, PA (III); Kane & Lombard, MD (III); Lackawanna Refuse Site, PA (III); Lansdowne Radiation, PA, (III); Lansdowne Radiation, PA (III)*; Leetown Pesticide, WV (III); Lehigh Electric, PA (III); Matthews Electroplating, VA (III); McAdoo-IRM, PA (III); McAdoo Associates, PA (III)*; Millcreek, PA (III); Palmerton Zinc, PA (III); Saltville Waste Disposal Ponds, VA (III); Sand, Gravel & Stone, MD (III); Taylor Borough, PA (III); Tybouts Corner, DE (III); Tyson's Dump, PA (III); Wade, PA (III); Westline, PA (III); West Virginia Ordnance Works, WV (III); American Creosote, FL (IV); Coleman Evans, FL (IV); Gallaway Ponds, TN (IV); Geiger (C&M Oil), SC (IV); Hipps Road Landfill, FL (IV); Hollingsworth, FL (IV); Miami Drum Services, FL (IV); Mowbray Engineering, AL (IV); Newport Dump Site, KY (IV); Pepper's Steel-EDD, FL (IV); Pioneer Sand, FL (IV); Powersville Landfill, GA (IV); Sapp Battery, FL (IV); Sodyeco, NC (IV); Tower Chemical, FL (IV); Whitehouse Waste Oil Pits, FL (IV); A&F Materials-IRM, IL (V); A&F Materials-EDD, IL (V)*; Acme Solvents, IL (V); Arcanum Iron & Metal, OH (V); Arrowhead Refinery, MN (V);

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* Subsequent Record of Decision
S Supplemental Record of Decision
EDD Enforcement Decision Document

Contaminated Media (continued)	Site, State (Region)
Soil (continued)	Berlin & Farro, MI (V); Burrows Sanitation, MI (V); Byron/Johnson Salvage Yard, IL (V); Cemetery Dump, MI (V); Chem-Dyne-EDD, OH (V); Cross Bros., IL (V); Distler Brickyard, KY (V); Forest Waste-IRM, MI (V); Forest Waste, MI (V)*; Lake Sandy Jo, IN (V); LaSalle Electrical, IL (V); Laskin/Poplar Oil, OH (V); Laskin/Poplar Oil, OH (V)*; Liquid Disposal, MI (V); Main Street Wellfield, IN (V); Marion/Bragg Landfill, IN (V); Morris Arsenic, MN (V); New Lyme, OH (V); Northernaire, MI (V); Northside Sanitary Landfill/Environmental Conservation and Chemical Corporation, IN (V); Old Mill, OH (V); Outboard Marine Corp., IL (V); Reilly Tar, MN (V); Reilly Tar & Chemical, MN (V)*; Rose Township, MI (V); Schmalz Dump, WI (V); Schmalz Dump, WI (V)*; Seymour, IN (V); Seymour, IN (V)*; Verona Well Field, MI (V)*; Wauconda Sand & Gravel, IL (V); Bayou Bonfouca, LA (VI); Bayou Bonfouca, LA (VI)*; Bayou Sorrel, LA (VI); Bio-Ecology Systems, TX (VI); Cecil Lindsey, AR (VI); Crystal City, TX (VI); Geneva Industries, TX (VI); Gurley Pit, AR (VI); Hardage/Criner, OK (VI); Highlands Acid Pit, TX (VI); MOTCO, TX (VI); Old Inger, LA (VI); Petro-Chemical Systems, TX (VI); Sikes Disposal Pits, TX (VI); Triangle Chem., TX (VI); United Creosoting, TX (VI); Aidex-IRM, IA (VII); Aidex, IA (VII)*; Conservation Chemical, MO (VII); Des Moines TCE, IA (VII); Ellisville, MO (VII); Ellisville Site Area, MO (VII)*; Times Beach, MO (VII); Denver Radium III, CO (VIII)*; Denver Radium/11th & Umatilla, CO (VIII)*; Denver Radium/12th & Quivas, CO (VIII)*; Denver Radium/Card Property, CO (VIII)*; Denver Radium/Open Space, CO (V111)*; Denver Radium/ROBCO, CO (VIII)*; Libby Ground Water, MT (VIII); Milltown, MT (VIII); Milltown-S, MT (VIII); Smuggler Mountain, CO (VIII); Union Pacific, WY (VIII); Woodbury Chemical, CO (VIII); Celtor Chemical Works, CA (IX); Celtor Chemical, CA (IX)*; Del Norte, CA (IX); Jibboom Junkyard, CA (IX); McColl, CA (IX); Mountain View/Globe, AZ (IX); Stringfellow Acid Pits-IRM, CA (IX); Stringfellow Acid Pits, CA (IX)*; Taputimu Farm, AS (IX); Ponders Corner-IRM, WA (X); Ponders Corner, WA (X)*; South Tacoma, WA (X); South Tacoma Channel-Well 12A, WA (X)*; United Chrome, OR (X); Western Processing, WA (X); Western Processing, WA (X)*
Surface Water	Auburn Road, NH (I); Beacon Heights, CT (I); Cannon/Plymouth, MA (I); Hocomonco Pond, MA (I); McKin-IRM, ME (I); Nyanza Chemical, MA (I); Ottati & Goss/Great Lakes, NH (I); Re-Solve, MA (I); Sylvester, NH (I); Tinkham Garage, NH (I); Brewster Well Field, NY (II); Burnt Fly Bog, NJ (II); Caldwell Trucking, NJ (II); Combe Fill South

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* Subsequent Record of Decision
S Supplemental Record of Decision
EDD Enforcement Decision Document

Contaminated Media (continued)	Site, State (Region)
Surface Water (continued)	Landfill, NJ (II); GE Moreau, NY (II); GEMS Landfill, NJ (II); Helen Kramer, NJ (II); Hudson River, NY (II); Krysowaty Farm, NJ (II); Lipari Landfill, NJ (II); Lone Pine Landfill, NJ (II); Love Canal, NY (II); Marathon Battery, NY (II); Pijak Farm, NJ (II); Price Landfill, NJ (II)*; Sharkey Landfill, NJ (II); Sinclair Refinery, NY (II); Army Creek Landfill, DE (III); Bruin Lagoon, PA (III); Chisman Creek, VA (III); Douglassville, PA (III); Drake Chemical, PA (III); Enterprise Avenue, PA (III); Fischer & Porter PA (III); Harvey-Knott, DE (III); Heleva Landfill, PA (III); Lackawanna Refuse Site, PA (III); Limestone Road, MD (III); McAdoo Associates, PA (III)*; Millcreek, PA (III); Moyer Landfill, PA (III); Saltville Waste Disposal Ponds, VA (III); Sand, Gravel & Stone, MD Surface Water (III); Taylor Borough, PA (III); Tyson's Dump, PA (III); Westline, PA (III); West Virginia Ordnance Works, WV (III); Gallaway Ponds, TN (IV); Geiger (C&M Oil), SC (VI); Pioneer Sand, FL (IV); Sapp Battery, FL (IV); Tower Chemical, FL (IV); Whitehouse Waste Oil Pits, FL (IV); A&F Materials-EDD, IL (V); Arcanum Iron & Metal, OH (V); Arrowhead Refinery, MN (V); Berlin & Farro, MI (V); Burrows Sanitation, MI (V); Chem-Dyne-EDD, OH (V); Johns-Manville, IL (V); Laskin/Poplar Oil, OH (V); Northside Sanitary Landfill/Environmental Conservation and Chemical Corporation, IN (V); Old Mill, OH (V); Outboard Marine Corp., IL (V); Reilly Tar, MN (V); Reilly Tar & Chemical, MN (V)*; Wauconda Sand & Gravel, IL (V); Bayou Bonfouca, LA (VI)*; Bio-Ecology Systems, TX (VI); Cecil Lindsey, AR (VI); Cleve Reber, LA (VI); Geneva Industries, TX (VI); Highlands Acid Pit, TX (VI)*; Mid-South Wood, AR (VI); MOTCO, TX (VI); Old Inger, LA (VI); Sikes Disposal Pits, TX (VI); Tar Creek, OK (VI); Central City/Clear Creek, CO (VIII); Libby Ground Water, MT (VIII); Marshall Landfill, CO (VIII); Smuggler Mountain, CO (VIII); Celtor Chemical Works, CA (IX); Celtor Chemical, CA (IX)*; Iron Mountain Mine, CA (IX); McColl, CA (IX); Stringfellow Acid Pits-IRM, CA (IX); Stringfellow Acid Pits, CA (IX)*; Western Processing, WA (X)*

Public Health and Environmental Threats	Site, State (Region)
Direct Contact	Davis Liquid Waste, RI (I); Industri-plex, MA (I); Re-Solve, MA (I); Winthrop Landfill-EDD, ME (I); Diamond Alkali, NJ (II); Hudson River, NY (II); Katonah Municipal Well, NY (II); Love Canal, NY (II); Montgomery Township, NJ (II); Pijak Farm, NJ (II); Renora Inc., NJ (II); Spence

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* Subsequent Record of Decision
S Supplemental Record of Decision
EDD Enforcement Decision Document

Public Health and Environmental Threats (continued)	Site, State (Region)
Direct Contact (continued)	Farm, NJ (II); Vega Alta, PR (II); Volney Landfill, NY (II); Waldick Aerospace, NJ (II); Williams Property, NJ (II); Kane & Lombard, MD (III); West Virginia Ordnance Works, WV (III); Geiger (C&M Oil), SC (IV); Powersville Landfill, GA (IV); Sodeyco, NC (IV); FMC Corporation, MN (V)*; Forest Waste-IRM, MI (V); Industrial Excess Landfill, OH (V); Johns-Manville, IL (V); Liquid Disposal, MI (V); Marion/Bragg Landfill, IN (V); New Brighton (TCAAP); MN (V)*; Northside Sanitary Landfill/Environmental Conservation and Chemical Corporation, IN (V); Rose Township, MI (V); Schmalz Dump, WI (V); Seymour, IN (V)*; Bayou Bonfouca, LA (VI)*; Cleve Reber, LA (VI); Crystal City Airport, TX (VI); Gurley Pit, AR (VI); Hardage/Criner, OK (VI); Petro-Chemical Systems, TX (VI); Conservation Chemical, MO (VII); Denver Radium III, CO (VIII)*; Denver Radium/11th & Umatilla, CO (VIII)*; Denver Radium/12th & Quivas, CO (VIII)*; Denver Radium/Open Space, CO (VIII)*; Litchfield Airport, AZ (IX); San Fernando Area I, CA (IX); Stringfellow Acid Pits, CA (IX)
Public Exposure	Davis Liquid Waste, RI (I); Re-Solve, MA (I)*; Burnt Fly Bog, NJ (II); Chemical Control, NJ (II)*; Diamond Alkali, NJ (II); Love Canal, NY (II); Metaltec/Aerosystems, NJ (II); Lansdowne Radiation, PA (III); Millcreek, PA (III); Saltville Waste Disposal Ponds, VA (III); Powersville Landfill, GA (IV); Sodeyco, NC (IV); Johns-Manville, IL (V); Industrial Excess Landfill, OH (V); Liquid Disposal, MI (V); Northside Sanitary Landfill/Environmental Conservation and Chemical Corporation, IN (V); Rose Township, MI (V); Seymour, IN (V)*; Verona Well Field-IRM, MI (V); Crystal City Airport, TX (VI); Denver Radium III, CO (VIII)*; Denver Radium/11th & Umatilla, CO (VIII); Denver Radium/12th & Quivas, CO (VIII)*; Denver Radium/Card Property, CO (VIII)*; Denver Radium/Open Space, CO (VIII)*; Litchfield Airport, AZ (IX); McColl, CA (IX)
Remedy Selection	
Consent Decree	Winthrop Landfill-EDD, ME (I); Hyde Park-EDD, NY (II); Fischer & Porter, PA (III); A&F Materials Company-EDD, IL (V); Chem-Dyne-EDD, OH (V); Reilly Tar & Chemical, MN (V)

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* Subsequent Record of Decision
S Supplemental Record of Decision
EDD Enforcement Decision Document

Remedy Selection (continued)	**Site, State (Region)**
Deed Restriction	Winthrop Landfill-EDD, ME (I); Friedman Property, NJ (II); Chisman Creek, VA (III); West Virginia Ordnance Works, WV (III); Powersville Landfill, GA (IV); Arcanum Iron & Metal, OH (V); Lake Sandy Jo, IN (V); Marion/Bragg Landfill, IN (V); Morris Arsenic, MN (V); Northside Sanitary Landfill/Environmental Conservation and Chemical Corporation, IN (V); Seymour, IN (V)*; Reilly Tar & Chemical, MN (V); Mid-South Wood, AR (VI); South Tacoma Channel-Well 12A, WA (X)*; Western Processing, WA (X)*
Fund Balancing	Outboard Marine Corp., IL (V); Iron Mountain Mine, CA (IX)
Interim Remedy	Diamond Alkali, NJ (II); Kane & Lombard, MD (III); Palmerton Zinc, PA (III); Saltville Waste Disposal Ponds, VA (III); New Brighton (TCAAP), MN (V)*; Central City/Clear Creek, CO (VIII); Denver Radium III, CO (VIII)*; Denver Radium/11th & Umatilla, CO (VIII)*; Denver Radium/12th & Quivas, CO (VIII)*; Denver Radium/Open Space, CO (VIII)*; Litchfield Airport, AZ (IX); Operating Industries, CA (IX); San Fernando Area I, CA (IX); San Gabriel Area I, CA (IX); Stringfellow Acid Pits, CA (IX)
No Action Remedy	Cooper Road, NJ (II); Friedman Property, NJ (II); South Brunswick Landfill, NJ (II)*; Suffern Village Well Field, NY (II); Middletown Road, MD (III); Presque Isle, PA (III); Taylor Borough, PA (III)*; Tri-City Conservation, FL (IV); Varsol Spill, FL (IV); Morris Arsenic, MN (V); Cecil Lindsey, AR (VI); Highlands Acid Pit, TX (VI)*; Toftdahl Drum, WA (X)*
O & M	Auburn Road, NH (I); Baird & McGuire, MA (I); Davis Liquid Waste, RI (I); Industri-plex, MA (I); Kellogg-Deering Well Field, CT (I); Ottati & Goss/Great Lakes, NH (I); Re-Solve, MA (I); Re-Solve, MA (I)*; Tinkham Garage, NH (I); Winthrop Landfill-EDD, ME (I); Brewster Well Field, NY (II); Burnt Fly Bog, NJ (II); Caldwell Trucking, NJ (II); Combe Fill North Landfill, NJ (II); Combe Fill South Landfill, NJ (II); Diamond Alkali, NJ (II); D'Imperio Property, NJ (II); Endicott Village Well Field, NY (II); Florence Landfill, NJ (II); GE Moreau, NY (II); Haviland Complex, NY (II); Hyde Park-EDD, NY (II); Katonah Municipal Well, NY (II); Kentucky Avenue Wellfield, KY (II); Krysowaty Farm, NJ (II); Lang Property, NJ (II); Love Canal, NY (II); Marathon Battery, NY (II); Metaltec/Aerosystems, NJ (II);

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* Subsequent Record of Decision
S Supplemental Record of Decision
EDD Enforcement Decision Document

Remedy Selection (continued)	Site, State (Region)
O & M (continued)	PAS Oswego, NY (II); Pijak Farm, NJ (II); Price Landfill, NJ (II); Price Landfill, NJ (II)*; Renora Inc., NJ (II); Rockaway Borough Wellfield, NJ (II); Sharkey Landfill, NJ (II); South Brunswick Landfill, NJ (II)*; Spence Farm, NJ (II); Syncon Resins, NJ (II); Vega Alta, PR (II); Vestal, NY (II); Volney Landfill, NY (II); Waldick Aerospace, NJ (II); Williams Property, NJ (II); Army Creek Landfill, DE (III); Blosenski Landfill, PA (III); Bruin Lagoon, PA (III); Bruin Lagoon, PA (III)*; Chisman Creek, VA (III); Drake Chemical, PA (III); Heleva Landfill, PA (III); Kane & Lombard, MD (III); Lansdowne Radiation, PA (III)*; Limestone Road, MD (III); Matthews Electroplating, VA (III); Millcreek, PA (III); Saltville Waste Disposal Ponds, VA (III); Tybouts Corner Landfill, DE (III); West Virginia Ordnance Works, VA (III); A. L. Taylor, KY (IV); Distler Brickyard, KY (IV); Distler Farm, KY (IV); Gallaway Ponds, TN (IV); Hipps Road Landfill, FL (IV); Newport Dump Site, KY (IV); Palmetto Wood Preserving, SC (IV); Pioneer Sand, FL (IV); Powersville Landfill, GA (IV); Sapp Battery, FL (IV); SCRDI Dixiana, SC (IV); Sodyeco, NC (IV); Whitehouse Waste Oil Pits, FL (IV); A&F Materials-EDD, IL (V); Arcanum Iron & Metal, OH (V); Arrowhead Refinery, MN (V); Burrows Sanitation, MI (V); Byron/Johnson Salvage Yard, IL (V); Byron Salvage Yard, IL (V)*; Charlevoix, MI (V); Chem-Dyne-EDD, OH (V); Eau Claire-IRM, WI (V); FMC Corporation, MN (V)*; Johns-Manville, IL (V); Lake Sandy Jo, IN (V); Liquid Disposal, MI (V); Marion/Bragg Landfill, IN (V); New Brighton (TCAAP), MN (V)*; Northside Sanitary Landfill/Environmental Conservation and Chemical Corporation, IN (V); Old Mill, OH (V); Reilly Tar, MN (V); Reilly Tar & Chemical, MN (V)*; Rose Township, MI (V); Schmalz Dump, WI (V)*; Seymour, IN (V); Seymour, IN (V)*; Verona Well Field-IRM, MI (V); Bayou Bonfouca, LA (VI)*; Bayou Sorrel, LA (VI); Bio-Ecology Systems, TX (VI); Cleve Reber, LA (VI); Crystal City Airport, TX (VI); Geneva Industries, TX (VI); Gurley Pit, AR (VI); Hardage/Criner, OK (VI); Highlands Acid Pit, TX (VI)*; Mid-South Wood, AR (VI); Odessa Chromium I, TX (VI); Odessa Chromium II, TX (VI); Old Inger, LA (VI); Petro-Chemical Systems, TX (VI); Sikes Disposal Pits, TX (VI); Tar Creek, OK (VI); United Creosoting, TX (VI); Aidex, IA (VII)*; Conservation Chemical, MO (VII); Des Moines TCE, IA (VII);

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* Subsequent Record of Decision
S Supplemental Record of Decision
EDD Enforcement Decision Document

Remedy Selection (continued)	Site, State (Region)
O & M (continued)	Ellisville Site Area, MO (VII)*; Arsenic Trioxide, ND (VIII); Central City/Clear Creek, CO (VIII); Denver Radium III, CO (VIII)*; Denver Radium/11th & Umatilla, CO (VIII)*; Denver Radium/12th & Quivas, CO (VIII)*; Denver Radium/Card Property, CO (VIII)*; Denver Radium/Open Space, CO (VIII)*; Denver Radium/ROBCO, CO (VIII)*; Libby Ground Water, MT (VIII); Milltown, MT (VIII); Rocky Mountain Arsenal, CO (VIII); Smuggler Mountain, CO (VIII); Union Pacific, WY (VIII); Iron Mountain Mine, CA (IX); Litchfield Airport, AZ (IX); Operating Industries, CA (IX); San Fernando Area I, CA (IX); San Gabriel Area I, CA (IX); Stringfellow Acid Pits, CA (IX)*; Colbert Landfill, WA (X); Ponders Corner-IRM, WA (X); South Tacoma Channel-Well 12A, WA (X)*; Toftdahl Drum, WA (X); United Chrome, OR (X); Western Processing, WA (X)*
ROD Addendum	Sylvester, NH (I); Milltown, MT (VIII)
Water Supply	
Alternate Water Supply	Auburn Road, NH (I): Charles George, MA (I); Davis Liquid Waste, RI (I); Winthrop Landfill-EDD, ME (I); Bridgeport, NJ (II); Caldwell Trucking, NJ (II); Combe Fill South Landfill, NJ (II); GE Moreau, NY (II); Haviland Complex, NY (II); Kentucky Avenue Well Field, NY (II); Krysowaty Farm, NJ (II); Metaltec/Aerosystems, NJ (II); Montgomery Township, NJ (II); Olean Well Field, NY (II); Price Landfill, NJ (II); Vega Alta, PR (II); Williams Property, NJ (II); Blosenski Landfill, PA (III); Chisman Creek, VA (III); Fischer & Porter, PA (III); Industrial Lane, PA (III); Matthews Electroplating, VA (III); Palmetto Wood Preserving, SC (IV); Powersville Landfill, GA (IV); Acme Solvents, IL (V); Arrowhead Refinery, MN (V); Byron Salvage Yard, IL (V)*; Charlevoix, MI (V); Eau Claire-IRM, WI (V); Industrial Excess Landfill, OH (V); Kummer Landfill, MN (V); Lake Sandy Jo, IN (V); New Brighton/Arden Hills/St. Anthony, MN (V)*; New Brighton-Water Supply System, MN (V)*; Old Mill, OH (V); Reilly Tar, MN (V); Verona Well Field-IRM, MI (V); Odessa Chromium I, TX (VI); Odessa Chromium II, TX (VI); South Valley-IRM, NM (VI); Arsenic Trioxide, ND (VIII); Libby Ground Water, MT (VIII); Milltown, MT (VIII); Smuggler Mountain, CO (VIII); Colbert Landfill, WA (X)

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* Subsequent Record of Decision
S Supplemental Record of Decision
EDD Enforcement Decision Document

Water Supply (continued)	**Site, State (Region)**
Drinking Water Contaminants	Auburn Road, NH (I); Davis Liquid Waste, RI (I); Kellogg-Deering Well Field, CT (I); Brewster Well Field, NY (II); Caldwell Trucking, NJ (II); Combe Fill South Landfill, NJ (II); Endicott Village Well Field, NY (II); GE Moreau, NY (II); Haviland Complex, NY (II); Kentucky Avenue Well Field, NY (II); Metaltec/Aerosystems, NJ (II); Montgomery Township, NJ (II); Rockaway Borough Well Field, NJ (II); Vega Alta, PR (II); Vestal, NY (II); Williams Property, NJ (II); Blosenski Landfill, PA (III); Chisman Creek, VA (III); Fischer & Porter, PA (III); Industrial Lane, PA (III); Geiger (C&M Oil), SC (IV); Hipps Road Landfill, FL (IV); Powersville Landfill, GA (IV); Sodyeco, NC (IV); Arrowhead Refinery, MN (V); Byron Johnson Salvage Yard, IL (V)*; FMC Corporation, MN (V)*; Eau Claire-IRM, WI (V); Industrial Excess Landfill, OH (V); Lake Sandy Jo, IN (V); Main Street Wellfield, IN (V); Marion/Bragg Landfill, IN (V); New Brighton/Arden Hills/St. Anthony, MN (V)*; New Brighton (TCAAP), MN (V)*; Northside Sanitary Landfill/Environmental Conservation and Chemical Corporation, IN (V); Reilly Tar & Chemical, MN (V); Seymour, IN (V)*; Tower Chemical, FL (V); Verona Well Field-IRM, MI (V); Hardage/Criner, OK (VI); Odessa Chromium I, TX (VI); Odessa Chromium II, TX (VI); South Valley-IRM, NM (VI); Conservation Chemical, MO (VII); Des Moines TCE, IA (VII); Arsenic Trioxide, ND (VIII); Libby Ground Water, MT (VIII); Rocky Mountain Arsenal, CO (VIII); Smuggler Mountain, CO (VIII); Litchfield Airport, AZ (IX); San Fernando Area I, CA (IX); San Gabriel Area I, CA (IX); Colbert Landfill, WA (X)
Site Specific Characteristics	
Flood Plain	Baird & McGuire, MA (I); Tinkham Garage, NH (I); Chemical Control, NJ (II)*; Diamond Alkali, NJ (II); Florence Landfill, NJ (II); Helen Kramer, NJ (II); Renora Inc., NJ (II); Sharkey Landfill, NJ (II); Bruin Lagoon, PA (III)*; Drake Chemical, PA (III); Distler Brickyard, KY (IV); Hipps Road Landfill, FL (IV); A&F Materials, IL (V); A&F Materials-EDD, IL (V)*; FMC Corporation, MN (V)*;

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* Subsequent Record of Decision
S Supplemental Record of Decision
EDD Enforcement Decision Document

Site Specific Characteristics (continued)	Site, State (Region)
Flood Plain (continued)	Liquid Disposal, MI (V); Marion/Bragg Landfill, IN (V); Bayou Bonfouca, LA (VI); Bayou Bonfouca, LA (VI)*; Cleve Reber, LA (VI); Geneva Industries, TX (VI); Gurley Pit, AR (VI); Newport Dump Site, KY (IV); Highlands Acid Pit, TX (VI); Highlands Acid Pit, TX (VI)*; MOTCO, TX (VI); Sikes Disposal Pits, TX (VI); Triangle Chemical, TX (VI); Denver Radium/11th & Umatilla, CO (VIII)*; Denver Radium/Open Space, CO (VIII)*; Celtor Chemical, CA (IX)*
Seismic	McColl, CA (IX)
Sole-Source Aquifer	Davis Liquid Waste, RI (I); Price Landfill, NJ (II); Rockaway Borough Wellfield, NJ (II); Biscayne Aquifer Sites, FL (IV); Pioneer Sand, FL (IV)
Subsidence	McAdoo Associates, PA (III)*; Taylor Borough, PA (III); Wauconda Sand & Gravel, IL (V); Highlands Acid Pit, TX (VI)
Standards/Regulations/ Permits/Guidance	
ARARs	
MCLs	Davis Liquid Waste, RI (I); Re-Solve, MA (I)*; Endicott Village Well Field, NY (II); GE Moreau, NY (II); Haviland Complex, NY (II); Montgomery Township, NJ (II); Renora Inc., NJ (II); Williams Property, NJ (II); Palmetto Wood Preserving, SC (IV); FMC Corporation, MN (V)*; Liquid Disposal, MI (V); New Brighton/Arden Hills/St. Anthony, MN (V)*; New Brighton (TCAAP), MN (V)*; Northside Sanitary Landfill/Environmental Conservation and Chemical Corporation, IN (V); Rose Township, MI (V); Schmalz Dump, WI (V)*; Seymour, IN (V)*; Highlands Acid Pit, TX (VI)*; Conservation Chemical, MO (VII); Rocky Mountain Arsenal, CO (VIII); Litchfield Airport, AZ (IX); San Fernando Area I, CA (IX)
MCLGs	Northside Sanitary Landfill/Environmental Conservation and Chemical Corporation, IN (V)
Action-Specific	Davis Liquid Waste, RI (I); Ottati & Goss/Great Lakes, NH (I); Re-Solve, MA (I)*; Chemical Control, NJ (II)*; Diamond Alkali, NJ (II); Endicott Village Well Field, NY (II)*;

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* Subsequent Record of Decision
S Supplemental Record of Decision
EDD Enforcement Decision Document

Standards/Regulations/ Permits/Guidance (continued)	Site, State (Region)
Action-Specific (continued)	GE Moreau, NY (II); Katonah Municipal Well, NY (II); Renora Inc., NJ (II); South Brunswick Landfill, NJ (II)*; Vega Alta, PR (II); Montgomery Township, NJ (II); Volney Landfill, NY (II); Waldick Aerospace, NJ (II); Williams Property, NJ (II); Kane & Lombard, MD (III); Palmerton Zinc, PA (III): Saltville Waste Disposal Ponds, VA (III); Geiger (C&M Oil), SC (IV): Newport Dump Site, KY (IV); Palmetto Wood Preserving, SC (IV); Powersville Landfill, GA (IV); Sodeyco, NC (IV); Tower Chemical, FL (IV); FMC Corporation, MN (V)*; Johns-Manville, IL (V); Laskin/Poplar Oil, OH (V)*; Liquid Disposal, MI (V); Marion/Bragg Landfill, IN (V); New Brighton (TCAAP), MN (V)*; Northside Sanitary Landfill/Environmental Conservation and Chemical Corporation, IN (V); Rose Township, MI (V); Schmalz Dump, WI (V)*; Seymour, IN (V)*; Bayou Bonfouca, LA (VI)*; Bayou Sorrel, LA (VI); Cleve Reber, LA (VI); Crystal City Airport, TX (VI); Gurley Pit, AR (VI); Hardage/Criner, OK (VI); Mid-South Wood Products, AR (VI); Petro-Chemical System, TX (VI); Conservation Chemical, MO (VII); Central City/Clear Creek, CO (VIII); Denver Radium/11th & Umatilla, CO (VIII)*; Denver Radium/12th & Quivas CO (VIII)*; Denver Radium III, CO (VIII)*; Denver Radium/Card Property, CO (VIII)*; Denver Radium/Open Space, CO (VIII)*; Litchfield Airport, AZ (IX); San Fernando Area I, CA (IX); San Gabriel Area I, CA (IX); Stringfellow Acid Pits, CA (IX)
Chemical-Specific	Davis Liquid Waste, RI (I); Ottati & Goss/Great Lakes, NH (I); Re-Solve, MA (I)*; Chemical Control, NJ (II)*; Diamond Alkali, NJ (II); Endicott Village Well Field, NY (II); GE Moreau, NY (II); Haviland Complex, NY (II); Katonah Municipal Well, NY (II); Montgomery Township, NJ (II); Renora Inc., NJ (II); Suffern Village Well Field, NY (II); Vega Alta, PR (II); Volney Landfill, NY (II); Waldick Aerospace, NJ (II); Williams Property, NJ (II); Saltville Waste Disposal Ponds, VA (III); West Virginia Ordnance Works, WV (III); Geiger (C&M Oil), SC (IV); Palmetto Wood Preserving, SC (IV); Powersville Landfill, GA (IV); Sodyeco, NC (IV); Tower Chemical, FL (IV); Tri-City Conservation, FL (IV); Johns-Manville, IL (V); Liquid Disposal, MI (V); New Brighton/Arden Hills/St. Anthony, MN (V)*; New Brighton (TCAAP), MN (V)*; FMC Corporation, MN (V)*; Northside Sanitary Landfill/Environmental Conservation and Chemical Corporation, IN (V); Rose Township, MI (V); Schmalz Dump, WI (V); Seymour, IN (V)*;

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* Subsequent Record of Decision
S Supplemental Record of Decision
EDD Enforcement Decision Document

Standards/Regulations/ Permits/Guidance (continued)	Site, State (Region)
Chemical-Specific (continued)	Bayou Bonfouca, LA (VI)*; Hardage/Criner, OK (VI); Mid-South Wood Products, AR (VI); Petro-Chemical Systems, TX (VI); Conservation Chemical, MO (VII); Central City/Clear Creek, CO (VIII); Denver Radium III, CO (VIII)*; Denver Radium/11th & Umatilla, CO (VIII)*; Denver Radium/12th & Quivas, CO (VIII)*; Denver Radium/Open Space, CO (VIII)*; Denver Radium/Card Property, CO (VIII)*; Rocky Mountain Arsenal, CO (VIII); Litchfield Airport, AZ (IX); San Fernando Area I, CA (IX); San Gabriel Area I, CA (IX); Colbert Landfills, WA (X)
Location-Specific	Davis Liquid Waste, RI (I); Re-Solve, MA (I)*; Chemical Control, NJ (II)*; Diamond Alkali, NJ (II); Waldick Aerospace, NJ (II); West Virginia Ordnance Works, WV (III); Geiger (C&M Oil), SC (IV); Newport Dump Site, KY (IV); Tower Chemical, FL (IV); Marion/Bragg Landfill, IN (V); Rose Township, MI (V); Bayou Bonfouca, LA (VI)*; Bayou Sorrel, LA (VI); Cleve Reber, LA (VI); Gurley Pit, AR (VI); Highlands Acid Pit, TX (VI)*; Central City/Clear Creek, CO (VIII); Denver Radium III, CO (VIII)*; Denver Radium/Card Property, CO (VIII)*
Clean Air Act	Re-Solve, MA (I)*; Endicott Village Well Field, NY (II); Johns-Manville, IL (V); Laskin/Poplar Oil, OH (V)*; New Brighton (TCAAP), MN (V)*; Seymour, IN (V)*; Gurley Pit, AR (VI); San Fernando Area I, CA (IX)
Clean Water Act	Davis Liquid Waste, RI (I); Re-Solve, MA (I)*; Chemical Control, NJ (II)*; Endicott Village Well Field, NY (II); Haviland Complex, NY (II); Katonah Municipal Well, NY (II); South Brunswick Landfill, NJ (II); Vega Alta, PR (II); Volney Landfill, NY (II); Saltville Waste Disposal Ponds, VA (III); Tower Chemical, FL (IV); FMC Corporation, MN (V); Liquid Disposal, MI (V); Rose Township, MI (V); Crystal City Airport, TX (VI); Highlands Acid Pit, TX (VI)*; Conservation Chemical, MO (VII); Stringfellow Acid Pits, CA (IX); Colbert Landfill, WA (X)
Drinking Water Standards	GE Moreau, NY (II); Rockaway Borough Wellfield, NJ (II); Coleman Evans, FL (IV); Old Inger, LA (IV); Tri-City Conservation, FL (IV); Burrows Sanitation, MI (VI); New Brighton/Arden Hills/St. Anthony, MN (V)*; Northside Sanitary Landfill/Environmental Conservation and Chemical

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* Subsequent Record of Decision
S Supplemental Record of Decision
EDD Enforcement Decision Document

Standards/Regulations/ Permits/Guidance (continued)	Site, State (Region)
Drinking Water Standards (continued)	Corporation, IN (V); South Valley-IRM, NM (VI); Milltown, MT (VIII); Colbert Landfill, WA (X); United Chrome, OR (X)
Institutional Controls	Beacon Heights, CT (I); Re-Solve, MA (I)*; Winthrop Landfill-EDD, ME (I); Friedman Property, NJ (II); GE Moreau, NY (II); Marathon Battery, NY (II); Olean Well Field, NY (II); Waldick Aerospace, NJ (II); Chisman Creek, VA (III); Industrial Lane, PA (III); Saltville Waste Disposal Ponds, VA (III); Tybouts Corner, DE (III); West Virginia Ordnance Works, WV (III); Biscayne Aquifer Sites, FL (IV); Gallaway Ponds, TN (IV); Hipps Road Landfill, FL (IV); Newport Dump Site, KY (IV); Pepper's Steel-EDD, FL (IV); Powersville Landfill, GA (IV); Sapp Battery, FL (IV); Tower Chemical, FL (IV); A&F Materials-EDD, IL (V); Arcanum Iron & Metal, OH (V); Arrowhead Refinery, MN (V); Charlevoix, MI (V)*; FMC Corporation, MN (V)*; Johns-Manville, IL (V); Lake Sandy Jo, IN (V); Marion/Bragg Landfill, IN (V); Northside Sanitary Landfill/Environmental Conservation and Chemical Corporation, IN (V); Old Mill, OH (V); Reilly Tar & Chemical, MN (V)*; Seymour, IN (V)*; Mid-South Wood Products; AR (VI); Odessa Chromium I, TX (VI); Odessa Chromium II, TX (VI); Old Inger, LA (VI); United Creosoting, TX (VI); Conservation Chemical, MO (VII); Arsenic Trioxide, ND (VIII); Denver Radium Site Streets, CO (VIII); Denver Radium/Open Space, CO (VIII)*; Libby Ground Water, MT (VIII); Ponders Corner, WA (X)*; South Tacoma Channel-Well 12A, WA (X)*; Western Processing, WA (X)*
Public Health Advisory	Lansdowne Radiation, PA (III)
RCRA	Western Sand & Gravel, RI (I); Diamond Alkali, NJ (II); Love Canal, NY (II); South Brunswick Landfill, NJ (II)*; PAS Oswego, NY (II); Volney Landfill, NY (II); Williams Property, NJ (II); Saltville Waste Disposal Ponds, VA (III); Biscayne Aquifer Sites, FL (IV); Geiger (C&M Oil), SC (IV); Newport Dump Site, KY (IV); Palmetto Wood Preserving, SC (IV); Powersville Landfill, GA (IV); Sodyeco, NC (IV); Tower Chemical, FL (IV); Arcanum Iron & Metal, OH (V); Burrows Sanitation, MI (V); Laskin/Poplar Oil, OH (V)*; Marion/Bragg Landfill, IN (V); Old Mill, OH (V); Seymour, IN (V)*; Cleve Reber, LA (VI); Crystal City Airport, TX (VI); Gurley Pit, AR (VI); Aidex, IA (VII)*;

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* Subsequent Record of Decision
S Supplemental Record of Decision
EDD Enforcement Decision Document

Standards/Regulations/ Permits/Guidance (continued)	**Site, State (Region)**
RCRA (continued)	Ellisville Site Area, MO (VII)*; Central City/Clear Creek, CO (VIII); Litchfield Airport, AZ (IX); San Fernando Area I, CA (IX); Stringfellow Acid Pits, CA (IX) Ponders Corner, WA (X)*
RCRA Closure Requirements	Winthrop Landfill-EDD, ME (I); Re-Solve, MA (I)*; Bridgeport, NJ (II); Combe Fill North Landfill, NJ (II); Renora Inc., NJ (II); Army Creek Landfill, DE (III); Blosenski Landfill, PA (III); Enterprise Avenue, PA (III); Kane & Lombard, MD (III); Moyer Landfill, PA (III); Tyson's Dump, PA (III); Gallaway Ponds, TN (IV); Pioneer Sand, FL (IV); Lake Sandy Jo, IN (V); Liquid Disposal, MI (V); Rose Township, MI (V); Bayou Sorrel, LA (VI); Conservation Chemical, MO (VII); Conservation Chemical, MO (VII); South Tacoma, WA (X); Western Processing, WA (X)*
Alternate Closure	Davis Liquid Waste, RI (I); Kane & Lombard, MD (III); Johns-Mansville, IL (V)
Clean Closure	Renora Inc., NJ (II); Williams Property, NJ (II); Bayou Bonfouca, LA (VI)*
Landfill Closure	Johns-Manville, IL (V); Northside Sanitary Landfill/Environmental Conservation and Chemical Corporation, IN (V); Hardage/Criner, OK (VI)
RCRA Landfill Specifications	Picillo Farm, RI (I); Caldwell Trucking, NJ (II); Lang Property, NJ (II); Sharkey Landfill, NJ (II); Drake Chemical, PA (III); Tyson's Dump, PA (III); American Creosote, FL (IV); Pioneer Sand, FL (IV); Spiegelberg Landfill, MI (V); Bio-Ecology Systems, TX (VI); Western Processing, WA (X)*
RCRA Locational Requirements	Tyson's Dump, PA (III); Berlin & Farro, MI (V)
Safe Drinking Water Act	Davis Liquid Waste, RI (I); Re-Solve, MA (I)*; Endicott Village Well Field, NY (II); GE Moreau, NY (II); Haviland Complex, NY (II); Montgomery Township, NJ (II); Renora Inc., NJ (II); Volney Landfill, NY (II); Williams Property, NJ (II); Palmetto Wood Preserving, SC (IV); Powersville Landfill, GA (IV); Sodyeco, NC (IV); Tower Chemical, FL (IV); FMC Corporation, MN (V)*;

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* Subsequent Record of Decision
S Supplemental Record of Decision
EDD Enforcement Decision Document

Standards/Regulations/ Permits/Guidance (continued)	**Site, State (Region)**
Safe Drinking Water Act (continued)	New Brighton (TCAAP), MN (V)*; Northside Sanitary Landfill/Environmental Conservation and Chemical Corporation, IN (V); Rose Township, MI (V); Schmalz Dump, WI (V)*; Seymour, IN (V)*; Highlands Acid Pit, TX (VI)*; Conservation Chemical, MO (VII); Litchfield Airport, AZ (IX); San Fernando Area I, CA (IX); Colbert Landfill, WA (X)
State Criteria	Davis Liquid Waste, RI (I); Re-Solve, MA (I)*; Brewster Well Field, NY (II); Bridgeport, NJ (II); Diamond Alkali, NJ (II); D'Imperio Property, NJ (II); Endicott Village Well Field, NY (II); GE Moreau, NY (II); Goose Farm, NJ (II); Haviland Complex, NY (II); Katonah Municipal Well, NY (II); Kentucky Avenue Wellfield, NY (II); Metaltec/Aerosystems, NJ (II); Montgomery Township, NJ (II); Renora Inc., NJ (II); Sharkey Landfill, NJ (II); Sinclair Refinery, NY (II); Swope Oil, NJ (II); Suffern Village Well Field, NY (II); Volney Landfill, NY (II); Waldick Aerospace, NJ (II); Williams Property, NJ (II); Palmerton Zinc, PA (III); Saltville Waste Disposal Ponds, VA (III); Coleman Evans, FL (IV); Hipps Road Landfill, FL (IV); Powersville Landfill, GA (IV); SCRDI Dixiana, SC (IV); Sodyeco, NC (IV); Tri-City Conservation, FL (IV); A&F Materials-EDD, IL (V)*; FMC Corporation, MN (V)*; Johns-Manville, IL (V); Laskin/Poplar Oil, OH (V)*; Liquid Disposal, MI (V); Marion/Bragg Landfill, IN (V); Northside Sanitary Landfill/Environmental Conservation and Chemical Corporation, IN (V); Reilly Tar & Chemical, MN (V)*; Schmalz Dump, WI (V)*; Seymour, IN (V)*; Conservation Chemical, MO (VII); Ellisville Site Area, MO (VII)*; Central City/Clear Creek, CO (VIII); Union Pacific, WY (VIII); Iron Mountain Mine, CA (IX); Litchfield Airport, AZ (IX); San Fernando Area I, CA (IX); San Gabriel Area I, CA (IX); Stringfellow Acid Pits, CA (IX); Colbert Landfill, WA (X); South Tacoma Channel-Well 12A, WA (X)*
State Permit	D'Imperio Property, NJ (II); Goose Farm, NJ (II); Army Creek Landfill, DE (III); Verona Well Field-IRM, MI (V)
Toxic Substances Control Act	Picillo Farm, RI (I); Re-Solve, MA (I)*; Krysowaty Farm, NJ (II); Renora Inc., NJ (II); Mowbray Engineering, AL (IV); Fields Brook, OH (V)

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* Subsequent Record of Decision
S Supplemental Record of Decision
EDD Enforcement Decision Document

Standards/Regulations/ Permits/Guidance (continued)	**Site, State (Region)**
Water Quality Criteria	Re-Solve, MA (I)*; Chemical Control, NJ (II)*; Endicott Village Well Field, NY (II); Katonah Municipal Well, NY (II); Lipari Landfill, NJ (II)*; Army Creek Landfill, DE (III); Coleman Evans, FL (IV); FMC Corporation, MN (V)*; Johns-Manville, IL (V); New Brighton-Water Supply System, MN (V)*; Northside Sanitary Landfill/Environmental Conservation and Chemical Corporation, IN (V); Verona Well Field-IRM, MI (V); Crystal City Airport, TX (VI); Conservation Chemical, MO (VII); Litchfield Airport, AZ (IX)
Testing/Pilot Studies	
Leachability Tests	Re-Solve, MA (I)
Treatability Studies	Davis Liquid Waste, RI (I); Re-Solve, MA (I)*; Winthrop Landfill-EDD, ME (I); Chemical Control, NJ (II)*; Renora Inc., NJ (II); Palmerton Zinc, PA (III); Saltville Waste Disposal Ponds, VA, (III); Leetown Pesticide, WV (IV); Sodyeco, NC (IV); Arcanum Iron & Metal, OH (V); Seymour, IN (V)*; Old Inger, LA (VI); Central City/Clear Creek, CO (VIII)
Technology	
Aeration	McKin, ME (I); Ottati & Goss/Great Lakes, NH (I); Hollingsworth, FL (IV); Triangle Chem., TX (VI); San Fernando Area I, CA (IX)
Air Monitoring	Johns-Manville, IL (V); Operating Industries, CA (IX)
Air Stripping	Davis Liquid Waste, RI (I); Industri-plex, MA (I); Kellogg-Deering Well Field, CT (I); Re-Solve, MA (I)*; Brewster Well Field, NY (II); Caldwell Trucking, NJ (II); Endicott Village Well Field, NY (II); GE Moreau, NY (II); Haviland Complex, NY (II); Katonah Municipal Well, NY (II); Lang Property, NJ (II); Olean Well Field, NY (II); Price Landfill, NJ (II)*; Vega Alta, PR (II); Vestal, NY (II); Waldick Aerospace, NJ (II); Williams Property, NJ (II); Tyson's Dump, PA (III); Biscayne Aquifer Sites, FL (IV); Hollingsworth, FL (IV); Eau Claire-IRM, WI (V); LeHillier/Mankato, MN (V); Liquid Disposal, MI (V);

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* Subsequent Record of Decision
S Supplemental Record of Decision
EDD Enforcement Decision Document

Technology (continued)	**Site, State (Region)**
Air Stripping (continued)	Main Street Well Field, IN (V); New Brighton (TCAAP), MN (V)*; Rose Township, MI (V); Seymour, IN (V); Seymour, IN (V)*; Verona Well Field-IRM, MA (V); Verona Well Field, MI (V)*; Des Moines TCE, IA (VII); Marshall Landfill, CO (VIII); Rocky Mountain Arsenal, CO (VIII); Litchfield Airport, AZ (IX); San Gabriel Area I, CA (IX); Ponders Corner-IRM, WA (X); Ponders Corner, WA (X)*; South Tacoma, WA (X); South Tacoma Channel-Well 12A, WA (X)*
Capping	Beacon Heights, CT (I); Charles George, MA (I)*; Hocomonco Pond, MA (I); Industri-plex, MA (I); Nyanza Chemical, MA (I); Ottati & Goss/Great Lakes, NH (I); Re-Solve, MA (I); Sylvester, NH (I); Winthrop Landfill-EDD, ME (I); Bog Creek Farm, NJ (II); Combe Fill North Landfill, NJ (II); Combe Fill South Landfill, NJ (II); Diamond Alkali, NJ (II); D'Imperio Property, NJ (II); Florence Landfill, NJ (II); GE Moreau, NY (II); GEMS Landfill, NJ (II); Goose Farm, NJ (II); Helen Kramer, NJ (II); Lipari Landfill, NJ (II); PAS Oswego, NY (II); Sharkey Landfill, NJ (II); Sinclair Refinery, NY (II); Swope Oil, NJ (II); Volney Landfill, NY (II); Army Creek Landfill, DE (III); Blosenski Landfill, PA (III); Bruin Lagoon, PA (III)*; Chisman Creek, VA (III); Douglassville, PA (III); Drake Chemical, PA (III); Enterprise Avenue, PA (III); Heleva Landfill, PA (III); Kane & Lombard, MD (III); Lackawanna Refuse Site, PA (III); Limestone Road, MD (III); Matthews Electroplating, VA (III); McAdoo Associates, PA (III)*; Millcreek, PA (III); Moyer Landfill, PA (III); Tybouts Corner, DE (III); Tyson's Dump, PA (III); Wade, PA (III); A. L. Taylor, KY (IV); Davie Landfill, FL (IV); Hipps Road Landfill, FL (IV); Newport Dump Site, KY (IV); Powersville Landfill, GA (IV); Sodyeco, NC (IV); Whitehouse Waste Oil Pits, FL (IV); Chem-Dyne-EDD, OH (V); Johns-Manville, IL (V); Liquid Disposal, MI (V); Marion/Bragg Landfill, MI (V); New Lyme, OH (V); Northside Sanitary Landfill/Environmental Conservation and Chemical Corporation, IN (V); Schmalz Dump, WI (V)*; Seymour, IN (V)*; Bio-Ecology Systems Site, TX (VI); Cleve Reber, LA (VI); Crystal City Airport, TX (VI); Geneva Industries, TX, (VI); Gurley Pit, AR, (VI); Hardage/Criner, OK (VI); Mid-South Wood, AR (VI); Old Inger, LA (VI); United Creosoting, TX (VI); Aidex, IA (VII)*; Conservation Chemical, MO (VII); Denver Radium III, CO (VIII)*; Denver Radium/12th & Quivas, CO (VIII)*; Denver Radium/Open Space, CO (VIII)*; Smuggler Mountain, CO (VIII); Iron Mountain Mine, CA (IX); Mountain View/Globe,

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* Subsequent Record of Decision
S Supplemental Record of Decision
EDD Enforcement Decision Document

Technology (continued)	Site, State (Region)
Capping (continued)	AZ (IX); Queen City Farms-IRM/EDD, WA (X); South Tacoma Channel-Well 12A, WA (X); Western Processing, WA (X)*
Containment	Hudson River, NY (II); Lipari Landfill, NJ (II)*; Drake Chemical, PA (III); New Lyme, OH (V); Outboard Marine Corp., IL (V); Bayou Sorrel, LA (VI); Times Beach, MO (VII)
Decontamination	Diamond Alkali, NJ (II)
Dredging	Hocomonco Pond, MA (I); Hudson River, NY (II); Love Canal, NY (II); Marathon Battery, NY (II); Outboard Marine Corp., IL (V); Tar Creek, OK (VI)
Excavation	Baird & McGuire, MA (I); Beacon Heights, CT (I); Davis Liquid Waste, RI (I); Ottati & Goss/Great Lakes, NH (I); Hocomonco Pond, MA (I); Nyanza Chemical, MA (I); Picillo Farm, RI (I); Re-Solve, MA (I)*; Tinkham Garage, NH (I); Bog Creek Farm, NJ (II); Bridgeport, NJ (II); Burnt Fly Bog, NJ (II); Caldwell Trucking, NJ (II); D'Imperio Property, NJ (II); GE Moreau, NY (II); Helen Kramer, NJ (II); Krysowaty Farm, NJ (II); Lang Property, NJ (II); Love Canal, NY (II); Metaltec/Aerosystems, NJ (II); PAS Oswego, NY (II); Pijak Farm, NJ (II); Renora Inc., NJ (II); Swope Oil, NJ (II); Syncon Resins, NJ (II); Waldick Aerospace, NJ (II); Wide Beach, NY (II); Williams Property, NJ (II); Blosenski Landfill, PA (III); Douglassville, PA (III); Drake Chemical, PA (III); Kane & Lombard, MD (III); Leetown Pesticide, WV (III); Lansdowne Radiation, PA (III)*; Lehigh Electric, PA (III); McAdoo-IRM, PA (III); McAdoo Associates, PA (III)*; Millcreek, PA (III); Sand, Gravel & Stone, MD (III); Taylor Borough, PA (III); Tyson's Dump, PA (III); Tybouts Corner, DE (III); Westline, PA (III); West Virginia Ordnance Works, WV (III); American Creosote, FL (IV); Coleman Evans, FL (IV); Distler Brickyard, KY (IV); Distler Farm, KY (IV); Gallaway Ponds, TN (IV); Geiger (C&M Oil), SC (IV); Hollingsworth, FL (IV); Miami Drum Services, FL (IV); Mowbray Engineering, AL (IV); Palmetto Wood Preserving, SC (IV); Sapp Battery, FL (IV); Tower Chemical, FL (IV); A&F Materials-EDD, IL (V); Acme Solvents, IL (V); Arcanum Iron & Metal, OH (V); Arrowhead Refinery, MN (V); Berlin & Farro, MI (V); Burrows Sanitation, MI (V); Byron/Johnson Salvage, IL (V); Cemetery Dump, MI (V); Chem-Dyne-EDD, OH (V); Cross Bros., IL (V); Forest Waste, MI (V)*; Lake Sandy Jo, IN (V); LaSalle Electrical, IL (V); Northernaire, MI (V); Northside Sanitary Landfill/Environmental Conservation and Chemical Corporation, IN (V); Old Mill, OH (V); Outboard Marine

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* Subsequent Record of Decision
S Supplemental Record of Decision
EDD Enforcement Decision Document

Technology (continued)	Site, State (Region)
Excavation (continued)	Corp., IL (V); Rose Township, MI (V); Schmalz Dump, WI (V); Seymour, IN (V)*; Bayou Bonfouca, LA (VI); Bayou Bonfouca, LA (VI)*; Bayou Sorrel, LA (VI); Cleve Reber, LA (VI); Geneva Industries, TX (VI); Gurley Pit, AR (VI); Hardage/Criner, OK (VI); Highlands Acid Pit, TX (VI); Mid-South Wood, AR (VI); MOTCO, TX (VI); Petro-Chemical Systems, TX (VI); Old Inger, LA (VI); Sikes Disposal Pits, TX (VI); United Creosoting, TX (VI); Aidex, IA (VII)*; Ellisville, MO (VII); Ellisville Site Area, MO (VII)*; Times Beach, MO (VII); Denver Radium Site Streets, CO (VIII); Denver Radium III, CO (VIII)*; Denver Radium/11th & Umatilla, CO (VIII)*; Denver Radium/12th & Quivas, CO (VIII)*; Denver Radium/Card Property, CO (VIII)*; Denver Radium/Open Sapce, CO (VIII)*; Denver Radium/ROBCO, CO (VIII)*; Rocky Mountain Arsenal, CO (VIII); Smuggler Mountain, CO (VIII); Woodbury Chemical, CO (VIII); Celtor Chemical Works, CA (IX); Celtor Chemical, CA (IX)*; Del Norte, CA (IX); Jibboom Junkyard, CA (IX); McColl, CA (IX); Ponders Corner, WA (X)*; Queen City Farms-IRM/EDD, WA (X); South Tacoma, WA (X); South Tacoma Channel-Well 12A, WA (X)*; United Chrome, OR (X); Western Processing, WA (X)*
Filling	Lehigh Electric, PA (III); Taylor Borough, PA (III); Wade, PA (III); Coleman Evans, FL (IV); A&F Materials-EDD, IL (V)*; Cleve Reber, LA (VI); Tar Creek, OK (VI); Woodbury Chemical, CO (VIII)
Granular Activated Carbon	Re-Solve, MA (I)*; Rockaway Borough Wellfield, NJ (II); New Brighton/Arden Hills/St. Anthony, MN (V)*; New Brighton-Interim Water Treatment, MN (V)*; New Lyme, OH (V); Reilly Tar, MN (V); Reilly Tar & Chemical, MN (V)*; Old Inger, LA (VI); Rocky Mountain Arsenal, CO (VIII); Litchfield Airport, AZ (IX); San Fernando Area I, CA (IX); San Gabriel Area 1, CA (IX); Stringfellow Acid Pits, CA (IX)*
Ground Water Monitoring	Auburn Road, NH (I); Baird & McGuire, MA (I); Beacon Heights, CT (I); Hocomonco Pond, MA (I); Industri-plex, MA (I); Kellogg-Deering Well Field, CT (I); McKin, ME (I); Nyanza Chemical, MA (I); Ottati & Goss/Great Lakes, NH (I); Picillo Farm, RI (I); Re-Solve, MA (I)*; Tinkham Garage, NH (I); Winthrop Landfill-EDD, ME (I); Burnt Fly Bog, NJ (II); Caldwell Trucking, NJ (II); Chemical Control, NJ (II)*; Diamond Alkali, NJ (II); Endicott Village Well Field, NY (II); Friedman Property, NJ (II); GE Moreau, NY (II); Haviland Complex, NY (II); Hyde Park-EDD, NY (II); Katonah Municipal Well, NY (II); Kentucky Avenue Well Field, NY

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* Subsequent Record of Decision
S Supplemental Record of Decision
EDD Enforcement Decision Document

Technology (continued)	Site, State (Region)
Ground Water Monitoring (continued)	(II); Krysowaty Farm, NJ (II); Metaltec/Aerosystems, NJ (II); Montgomery Township, NY (II); PAS Oswego, NY (II); Pijak Farm, NJ (II); Price Landfill, NJ (II)*; South Brunswick Landfill, NJ (II)*; Suffern Village Well Field, NY (II); Vega Alta, PR (II); Volney Landfill, NY (II); Waldick Aerospace, NJ (II); Army Creek Landfill, DE (III); Blosenski Landfill, PA (III); Bruin Lagoon, PA (III)*; Chisman Creek, VA (III); Drake Chemical, PA (III); Kane & Lombard, MD (III); Limestone Road, MD (III); Millcreek, PA (III); Moyer Landfill, PA (III); Saltville Waste Disposal Ponds, VA (III); Taylor Borough, PA (III)*; Tybouts Corner, DE (III); Gallaway Ponds, TN (IV); Hipps Road Landfill, FL (IV); Pepper's Steel-EDD, FL (IV); Pioneer Sand, FL (IV); Powersville Landfill, GA (IV); Sapp Battery, FL (IV); A&F Materials-EDD, IL (V)*; Arcanum Iron & Metal, OH (V); Burrows Sanitation, MI (V); Byron Salvage Yard, IL (V)*; FMC Corporation, MN (V)*; Johns-Manville, IL (V); Lake Sandy Jo, IN (V); Marion/Bragg Landfill, IN (V); New Brighton (TCAAP), MN (V)*; New Lyme, OH (V); Northside Sanitary Landfill/Environmental Conservation and Chemical Corporation, IN (V); Novaco Industries, MI (V); Reilly Tar & Chemical, MN (V)*; Schmalz Dump, WI (V)*; Seymour, IN (V)*; Bayou Sorrel, LA (VI); Bio-Ecology Systems, TX (VI); Cecil Lindsey, AR (VI); Cleve Reber, LA (VI); Geneva Industries, TX (VI); Highlands Acid Pit, TX (VI); Highlands Acid Pit, TX (VI)*; Mid-South Wood, AR (VI); Sikes Disposal Pits, TX (VI); Aidex, IA (VII)*; Conservation Chemical, MO (VII); Ellisville Site Area, MO (VII)*; Arsenic Trioxide, ND (VIII); Marshall Landfill, CO (VIII); Rocky Mountain Arsenal, CO (VIII); Smuggler Mountain, CO (VIII); Union Pacific, WY (VIII); Woodbury Chemical, CO (VIII); Litchfield Airport, AZ (IX); San Fernando Area I, CA (IX); San Gabriel Area I, CA (IX); Colbert Landfill, WA (X); Queen City Farms-IRM/EDD, WA (X); Toftdahl Drum, WA (X)
Ground Water Treatment	Baird & McGuire, MA (I); Davis Liquid Waste, RI (I); Industri-plex, MA (I); Kellogg-Deering Well Field, CT (I); McKin, ME (I); Ottati & Goss/Great Lakes, NH (I); Re-Solve, MA (I)*; Sylvester, NH (I); Sylvester-S, NH (I); Tinkham Garage, NH (I); Winthrop Landfill-EDD, ME (I); Brewster Well Field, NY (II); Combe Fill South Landfill, NJ (II); Diamond Alkali, NJ (II); D'Imperio Property, NJ (II); Endicott Village Well Field, NY (II); GE Moreau, NY (II); GEMS Landfill, NJ (II); Goose Farm, NJ (II); Haviland Complex, NY (II); Helen Kramer, NJ (II); Hyde Park-EDD, NY (II); Katonah Municipal Well, NY (II); Lang Property, NJ (II); Lipari Landfill, NJ (II)*; Olean Well Field, NY (II);

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* Subsequent Record of Decision
S Supplemental Record of Decision
EDD Enforcement Decision Document

Technology (continued)	Site, State (Region)
Ground Water Treatment (continued)	PAS Oswego, NY (II); Price Landfill, NJ (II)*; Rockaway Borough Wellfield, NJ (II); Sharkey Landfill, NJ (II); Syncon Resins, NJ (II); Vega Alta, PR (II); Vestal, NY (II); Williams Property, NJ (II); Blosenski Landfill, PA (III); Harvey-Knott, DE (III); Heleva Landfill, PA (III); Leetown Pesticide, WV (III); Millcreek, PA (III); Tybouts Corner, DE (III); Coleman Evans, FL (IV); Distler Brickyard, KY (IV); Hipps Road Landfill, FL (IV); Hollingsworth, FL (IV); Palmetto Wood Preserving, SC (IV); SCRDI Dixiana, SC (IV); Sapp Battery, FL (IV); Sodyeco, NC (IV); Tower Chemical, FL (IV); Whitehouse Waste Oil Pits, FL (IV); Arrowhead Refinery, MN (V); Chem-Dyne-EDD, OH (V); FMC Corporation, MN (V)*; LeHillier/Mankato, MN (V); Liquid Disposal, MI (V); New Brighton/Arden Hills/St. Anthony, MN (V)*; New Brighton (TCAAP), MN (V)*; New Lyme, OH (V); Novaco Industries, MI (V); Old Mill, OH (V); Rose Township, MI (V); Seymour, IN (V); Verona Well Field, MI (V)*; Cleve Reber, LA (VI); Geneva Industries, TX (VI); Conservation Chemical, MO (VII); Des Moines TCE, IA (VII); Marshall Landfill, CO (VIII); Rocky Mountain Arsenal, CO (VIII); Union Pacific, WY (VIII); Del Norte, CA (IX); Litchfield Airport, AZ (IX); San Fernando Area I, CA (IX); San Gabriel Area I, CA (IX); Stringfellow Acid Pits, CA (IX); Colbert Landfill, WA (X); Ponders Corner, WA (X)*; South Tacoma Channel-Well 12A, WA (X)*; United Chrome, OR (X); Western Processing, WA (X)*
Incineration	Baird & McGuire, MA (I); Davis Liquid Waste, RI (I); Ottati & Goss/Great Lakes, NH (I); Bog Creek Farm, NJ (II); Bridgeport, NJ (II); Hyde Park-EDD, NY (II); Swope Oil, NJ (II); Williams Property, NJ (II); Drake Chemical, PA (III); Lackawanna Refuse Site, PA (III); Westline, PA (III); Coleman Evans, FL (IV); Geiger (C&M Oil), SC (IV); Mowbray Engineering, AL (IV); Soydeco, NC (IV); Tower Chemical, FL (IV); Acme Solvents, IL (V); Arrowhead Refinery, MN (V); Berlin & Farro, MI (V); Fields Brook, OH (V); LaSalle Electrical, IL (V); Laskin/Poplar Oil, OH (V); Laskin/Poplar Oil, OH (V)*; Metamora Landfill, MI (V); Rose Township, MI (V); Spiegelberg Landfill, MI (V); Bayou Bonfouca, LA (VI)*; Cleve Reber, LA (VI); Gurley Pit, AR (VI); Hardage/Criner, OK (VI); MOTCO, TX (VI); Sikes Disposal Pits, TX (VI); Triangle Chem., TX (VI); Woodbury Chemical, CO (VIII); Western Processing, WA (X)
Land Treatment	Re-Solve, MA (I)*; Renora Inc., NJ (II); Palmerton Zinc, PA (III); Old Inger, LA (VI)

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* Subsequent Record of Decision
S Supplemental Record of Decision
EDD Enforcement Decision Document

Technology (continued)	**Site, State (Region)**
Leachate Collection/ Treatment	Beacon Heights, CT (I); Charles George, MA (I)*; Picillo Farm, RI (I); Combe Fill South Landfill, NJ (II); GEMS Landfill, NJ (II); Helen Kramer, NJ (II); Lipari Landfill, NJ (II)*; Price Landfill, NJ (II)*; Volney Landfill, NY (II); Moyer Landfill, PA (III); Newport Dump Site, KY (IV); Pioneer Sand, FL (IV); New Lyme, OH (V); Northside Sanitary Landfill/Environmental Conservation and Chemical Corporation, IN (V); Wauconda Sand & Gravel, IL (V); Hardage/Criner, OK (VI); Petro-Chemical Systems, TX (VI); United Chrome, OR (X)
Levees	Baird & McGuire, MA (I); Douglassville, PA (III); Old Inger, LA (VI)
Offsite Discharge	Ottati & Goss/Great Lakes, NH (I); GE Moreau, NY (II); Katonah Municipal Well, NY; Vega Alta, PR (II); FMC Corporation, MN (V)*; Conservation Chemical, MO (VII); Central City/Clear Creek, CO (VIII); Litchfield Airport, AZ (IX); San Fernando Area I, CA (IX); Stringfellow Acid Pits, CA (IX)
Offsite Disposal	Cannon/Plymouth, MA (I); Keefe Environmental, NH (I); McKin-IRM, ME (I); McKin, ME (I)*; Re-Solve, MA (I); Burnt Fly Bog, NJ (II); Chemical Control, NJ (II); D'Imperio Property, NJ (II); Krysowaty Farm, NJ (II); Lang Property, NJ (II); Marathon Battery, NY (II); Metaltec/Aerosystems, NJ (II); Pijak Farm, NJ (II); Price Landfill, NJ (II)*; Renora Inc., NJ (II); Spence Farm, NJ (II); Swope Oil, NJ (II); Syncon Resins, NJ (II); Vega Alta, PR (II); Waldick Aerospace, NJ (II); Williams Property, NJ (II); Bruin Lagoon, PA (III); Enterprise Avenue, PA (III); Harvey-Knott, DE (III); Lackawanna Refuse Site, PA (III); Lansdowne Radiation, PA (III)*; Leetown Pesticide, WV (III); Lehigh Electric, PA (III); McAdoo-IRM, PA (III); McAdoo Associates, PA (III)*; Saltville Waste Disposal Ponds, VA (III); Sand, Gravel & Stone, MD (III); Taylor Borough, PA, (III); Westline, PA (III); West Virginia Ordnance Works, WV (III); Distler Brickyard, KY (IV); Miami Drum Services, FL (IV); Palmetto Wood Preserving, SC (IV); Pepper's Steel-EDD, FL (IV); SCRDI Dixiana, SC (IV); Soydeco, NC (IV); Tower Chemical, FL (IV); A&F Materials-IRM, IL (V); A&F Materials-EDD, IL (V)*; Acme Solvents, IL (V); Arcanum Iron & Metal, OH (V); Berlin & Farro, MI (V); Burrows Sanitation, MI (V); Byron/Johnson Salvage Yard, IL (V); Cemetery Dump, MI (V); Chem-Dyne-EDD, OH (V); Cross Bros., IL (V); Forest Waste, MI (V)*; Johns-Manville, IL (V); Laskin/Poplar Oil, OH (V)*;

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* Subsequent Record of Decision
S Supplemental Record of Decision
EDD Enforcement Decision Document

Technology (continued)	Site, State (Region)
Offsite Disposal (coninued)	Northernaire, MI (V); Old Mill, OH (V); Outboard Marine Corp., IL (V); Rose Township, MI (V); Schmalz Dump, WI (V); Seymour, IN (V)*; Wauconda Sand & Gravel, IL (V); Bayou Bonfouca, LA (VI); Bayou Sorrel, LA (VI); Cecil Lindsey, AR (VI); Geneva Industries, TX (VI); Highlands Acid Pit, TX (VI); MOTCO, TX (VI); Triangle Chem., TX (VI); Aidex-IRM, IA (VII); Aidex, IA (VII)*; Ellisville, MO (VII); Ellisville Site Area, MO (VII)*; Denver Radium Site Streets, CO (VIII); Denver Radium III, CO (VIII)*; Denver Radium/11th & Umatilla, CO (VIII)*; Denver Radium/12th & Quivas, CO (VIII)*; Denver Radium/Card Property, CO (VIII)*; Denver Radium/Open Space, CO (VIII)*; Denver Radium/ROBCO, CO (VIII)*; Woodbury Chemical, CO (VIII); Celtor Chemical Works, CA (IX); Celtor Chemical, CA (IX)*; Del Norte CA (IX); Jibboom Junkyard, CA (IX); McColl, CA (IX); Stringfellow Acid Pits-IRM, CA (IX); Ponders Corner, WA (X)*; Queen City Farms-IRM/EDD, WA (X); South Tacoma Channel-Well 12A, WA (X)*; United Chrome, OR (X); Western Processing, WA (X); Western Processing, WA (X)*
Offsite Treatment	GE Moreau, NY (II); Renora Inc., NJ (II); Volney Landfill, NY (II); Williams Property, NJ (II); Sodyeco, NC (IV); Tower Chemical, FL (IV); Laskin/Poplar Oil, OH (V)*
Onsite Containment	Re-Solve, MA (I); GE Moreau, NY (II); Enterprise Avenue, PA (III); Kane & Lombard, MD (III); Millcreek, PA (III); Davie Landfill, FL (IV); Tower Chemical, FL (IV); Lake Sandy Jo, IN (V); Liquid Disposal, MI (V); New Lyme, OH (V); Outboard Marine Corp., IL (V); Bio-Ecology Systems, TX (VI); Gurley Pit, AR (VI); United Creosoting, TX (VI); Ellisville Site Area, MO (VII)*; Times Beach, MO (VII); Western Processing, WA (X)*
Onsite Discharge	Davis Liquid Waste, RI (I); Re-Solve, MA (I)*; Endicott Village Well Field, NY (II); Haviland Complex, NY (II); Williams Property, NJ (II); Liquid Disposal, MI (V)
Onsite Disposal	Davis Liquid Waste, RI (I); Hocomonco Pond, MA (I); Picillo Farm, RI (I); Tinkham Garage, NH (I); Caldwell Trucking, NJ (II); Chemical Control, NJ (II)*; Love Canal, NY (II); Drake Chemical, PA (III); Enterprise Avenue, PA (III); American Creosote, FL (IV); Gallaway Ponds, TN (IV); SCRDI Dixiana, SC (IV); Sapp Battery, FL (IV); Arcanum Iron & Metal, OH (V); LaSalle Electrical, IL (V); Liquid Disposal, MI (V); Northside Sanitary Landfill/Environmental Conservation and Chemical Corporation, IN (V); Schmalz Dump, WI (V)*; Bayou Bonfouca, LA (VI)*; Crystal City

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* Subsequent Record of Decision
S Supplemental Record of Decision
EDD Enforcement Decision Document

Technology (continued)	Site, State (Region)
Onsite Disposal (continued)	Airport, TX (VI); Gurley Pit, AR (VI); Hardage/Criner, OK (VI); Petro-Chemical Systems, TX (VI); Sikes Disposal Pits, TX (VI); Aidex, IA (VII)*; Denver Radium III, CO (VIII)*; Smuggler Mountain, CO (VIII); Mountain View/Globe, AZ (IX); Western Processing, WA (X)*
Onsite Treatment	Davis Liquid Waste, RI (I); Re-Solve, MA (I)*; Chemical Control, NJ (II)*; Endicott Village Well Field, NY (II); GE Moreau, NY (II); Haviland Complex, NJ (II); Katonah Municipal Well, NY (II); Renora Inc., NJ (II); Vega Alta, PR (II); Volney Landfill, NY (II); Waldick Aerospace, NJ (II); Williams Property, NJ (II); Palmerton Zinc, PA (III); Saltville Waste Disposal Ponds, VA (III); Geiger (C&M Oil), SC (IV); Palmetto Wood Preserving, SC (IV); Sodyeco, NC (IV); Tower Chemical, FL (IV); Laskin/Poplar Oil, OH (V)*; Liquid Disposal, MI (V); New Brighton/Arden Hills/St. Anthony, MN (V)*; New Brighton (TCAAP), MN (V)*; Northside Sanitary Landfill/Environmental Conservation and Chemical Corporation, IN (V); Seymour, IN (V)*; Cleve Reber, LA (VI); Gurley Pit, AR (VI); Hardage/Criner, OK (VI); San Fernando Area I, CA (IX); Stringfellow Acid Pits, CA (IX); Colbert Landfill, WA (X)
Plume Management	GE Moreau, NY (II); Haviland Complex, NY (II); Hyde Park-EDD, NY (II); Price Landfill, NJ (II); Burrows Sanitation, MI (V); Seymour, IN (V); Verona Well Field-IRM, MI (V); Cleve Reber, LA (VI); San Fernando Area I, CA (IX)
Publicly Owned Treatment Works (POTW)	Tinkham Garage, NH (I); GEMS Landfill, NJ (II); Helen Kramer, NJ (II); Katonah Municipal Well, NY (II); Lipari Landfill, NJ (II)*; Vega Alta, PR (II); Tybouts Corner, DE (III); FMC Corporation, MN (V); Seymour, IN (V); Del Norte, CA (IX); San Gabriel Area I, CA (IX); Stringfellow Acid Pits, CA (IX)*; Western Processing, WA (X)*
Relocation	Lansdowne Radiation, PA (III); Lansdowne Radiation, PA (III)*; Petro-Chemical Systems, TX (VI); United Creosoting, TX (VI); Times Beach, MO (VII); Mountain View/Globe, AZ (IX)
Slurry Wall	Sylvester, NH (I); Diamond Alkali, NJ (II); Florence Landfill, NJ (II); GE Moreau, NY (II); Helen Kramer, NJ (II); Lipari Landfill, NJ (II); Lone Pine Landfill, NJ (II); PAS Oswego, NY (II); Volney Landfill, NY (II); Kane & Lombard, MD (III); Whitehouse Waste Oil Pits, FL (IV); Liquid Disposal, MI (V); Schmalz Dump, WI (V)*; Bayou Sorrel, LA (VI); Geneva Industries, TX (VI); Union Pacific, WY (VIII)

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* Subsequent Record of Decision
S Supplemental Record of Decision
EDD Enforcement Decision Document

Technology (continued)	Site, State (Region)
Soil Washing/Flushing	Re-Solve, MA (I)*
Solidification	Chemical Control, NJ (II)*; Geiger (C&M Oil), SC (IV); Mowbray Engineering, AL (IV); Pepper's Steel, FL (IV); Sapp Battery, FL (IV); Burrows Sanitation, MI (V); Fields Brook, OH (V); Forest Waste, MI (V)*; Liquid Disposal, MI (V); Cleve Reber, LA (VI); Queen City Farms, WA (X)
Stabilization	Re-Solve, MA (I); Marathon Battery, NY (II); Bruin Lagoon, PA (III); Bruin Lagoon, PA (III)*; Geiger (C&M Oil), SC (IV); Pepper's Steel-EDD, FL (IV); Tower Chemical, FL (IV); Gurley Pit, AR (VI); Mid-South Wood, AR (VI); Denver Radium/ROBCO, CO (VIII); Queen City Farms-IRM/EDD, WA (X)
Surface Water Diversion/ Collection	Charles George, MA (I)*; McKin, ME (I)*; Nyanza Chemical, MA (I); Blosenski Landfill, PA (III); Harvey-Knott, DE (III); Heleva Landfill, PA (III); Kane & Lombard, MD (III); Leetown Pesticide, WV (III); Moyer Landfill, PA (III); Saltville Waste Disposal Ponds, VA (III); Taylor Borough, PA (III); Tower Chemical, FL (IV); Stringfellow Acid Pits, CA (IX); Queen City Farms-IRM/EDD, WA (X)
Surface Water Monitoring	Johns-Manville, IL (V); Highlands Acid Pit, TX (VI)*
Temporary Storage	Petro-Chemical Systems, TX (VI); Minker Stout/Romaine Creek, MO (VII); Minker Stout/Stout, MO (VII); Denver Radium III, CO (VIII)*; Denver Radium/11th & Umatilla, CO (VIII)*; Denver Radium 12th & Quivas, CO (VIII)*; Denver Radium/Card Property, CO (VIII)*; Denver Radium/Open Space Property, CO (VIII)*; Denver Radium ROBCO, CO (VIII)*
Treatment Technology	Baird & McGuire, MA (I); Davis Liquid Waste, RI (I); Ottati & Goss/Great Lakes, NH (I); Re-Solve, MA (I)*; Tinkham Garage, NH (I); Bog Creek Farm, NJ (II); Bridgeport, NJ (II); Caldwell Trucking, NJ (II); Chemical Control, NJ (II)*; Goose Farm, NJ (II); Marathon Battery, NY (II); Metaltec/Aerosystems, NJ (II); Renora Inc., NJ (II); Syncon Resins, NJ (II); Wide Beach, NY (II); Williams Property, NJ (II); Bruin Lagoon, PA (III)*; Leetown Pesticide, WV (III); West Virginia Ordnance Works, WV (III); Coleman Evans, FL (IV); Geiger (C&M Oil), SC (IV); Mowbray Engineering, AL (IV); Palmetto Wood Preserving, SC (IV); Pepper's Steel-EDD, FL (IV); Sapp Battery, FL (IV); Sodyeco, NC (IV); Tower Chemical, FL (IV); Arrowhead Refinery, MN (V); Bayou Bonfouca, LA (VI); Burrows Sanitation, MI (V); Forest Waste, MI (V)*; LaSalle Electrical, IL (V); Laskin/Poplar, OH (V)*; Liquid

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* Subsequent Record of Decision
S Supplemental Record of Decision
EDD Enforcement Decision Document

Technology (continued)	**Site, State (Region)**
Treatment Technology (continued)	Disposal, MI (V); Seymour, IN (V)*; Oil Mid-South Wood, AR (VI); MOTCO, TX (VI); Sikes Disposal Pits, TX (VI); Triangle Chemical, TX (VI); Stringfellow Acid Pits, CA (IX)*; United Chrome, OR (X); Western Processing, WA (X)*
Venting	Beacon Heights, CT (I); Charles George, MA (I)*; GEMS Landfill, NJ (II); Helen Kramer, NJ (II); Heleva Landfill, PA (III); Moyer Landfill, PA (III); New Lyme, OH (V); Bayou Sorrel, LA (VI); Hardage/Criner, OK (VI)
Miscellaneous	
Municipally-Owned Site	Winthrop Landfill-EDD, ME (I); Rockaway Borough Wellfield, NJ (II); Volney Landfill, NY (II); Army Creek Landfill, DE (III); Enterprise Avenue, PA (III); Newport Dump Site, KY (IV); Powersville Landfill, GA (IV); Crystal City Airport, TX (VI); Denver Radium Site Streets, CO (VIII)
Wetlands	Davis Liquid Waste, RI (I); Hocomonco Pond, MA (I); Industri-plex, MA (I); Nyanza Chemical, MA (I); Re-Solve, MA (I)*; Tinkham Garage, NH (I); Bog Creek Farm, NJ (II); Bridgeport, NJ (II); Burnt Fly Bog, NJ (II); Combe Fill South Landfill, NJ (II); Helen Kramer, NJ (II); PAS Oswego, NY (II); Renora Inc., NJ (II); Wide Beach, NY (II); Chisman Creek, VA (III); Harvey-Knott, DE (III); Millcreek, PA (III); Westline, PA (III); West Virginia Ordnance Works, WV (III); Geiger (C&M Oil), SC (IV); Tower Chemical, FL (IV); Arrowhead Refinery, MN (V); Burrows Sanitation, MI (V); Reilly Tar & Chemical, MN (V)*; Rose Township, MI (V); Schmalz Dump, WI (V); Schmalz Dump, WI (V)*; Cleve Reber, LA (VI); Gurley Pit, AR (VI); Old Inger, LA (VI); Tar Creek, OK (VI)
Woods	Tinkham Garage, NH (I); Lansdowne Radiation, PA (III); Palmerton Zinc, PA (III); Old Inger, LA (VI)
Historically Significant	This category represents key words that will not be highlighted for Records of Decision signed after FY 1986.
ACL	Sylvester, NH (I); Western Sand & Gravel, RI (I); Winthrop Landfill-EDD, ME (I); Bog Creek Farm, NJ (II); D'Imperio Property, NJ (II); Goose Farm, NJ (II); Blosenski Landfill, PA (III); Harvey-Knott, DE (III); Newport Dump Site, KY (IV); SCRDI Dixiana, SC (IV); Highlands Acid Pit, TX (VI); Aidex, IA (VII)*; Old Mill, OH (V); Western Processing, WA (X)*

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* Subsequent Record of Decision
S Supplemental Record of Decision
EDD Enforcement Decision Document

Historically Significant (continued)

Background Levels	Nyanza Chemical, MA (I); Industrial Lane, PA (III); Sand, Gravel & Stone, MD (III); Taylor Borough, PA (III); Distler Brickyard, KY (IV); Distler Farm, KY (IV); Reilly Tar, MN (V); Triangle Chemical, TX (VI); Aidex, IA (VII)*; Arsenic Trioxide, ND (VIII); Toftdahl Drum, WA (X)
Deferred Decision	Cannon/Plymouth, MA (I); Lipari Landfill, NJ (II)*; Swope Oil, NJ (II); Douglassville, PA (III); McAdoo Associates, PA (III)*; Taylor Borough, PA (III); Tyson's Dump, PA (III); American Cresote, FL (IV); Davie Landfill, FL (IV); New Brighton/Arden Hills/St. Anthony, MN (V)*; Bayou Bonfouca, LA (VI); Ponders Corner, WA (X)*; South Tacoma Channel-Well 12A, WA (X)*
Temporary Remedial Measure	Hudson River, NY (II); Byron Salvage Yard, IL (VI)*; Denver Radium/ROBCO, CO (VIII); Denver Radium/Card Property, CO (VIII)*; Union Pacific, WY (VIII)

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